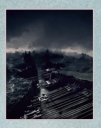
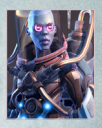
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3dcreative

Issue 063 November 2010



Interview
Nicolas Crombez



The Gallery
Luis Nieves, Daniel Karner, Nicolas Garilhe & more!



Project Overview
"Mursi Tribesman" by Adam Skutt

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- Free Artist Final Game Level

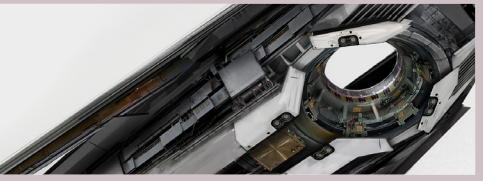
ZBrush Monster Character Creation
Chapter 02 - Swamp Monster
by Federico Scarbini

Cover Image | ZBrush Monster by Federico Scarbini

SWAMP MONSTER!

ADVANCED ZBRUSH SCULPTING







NEW!!! Unreal Games Engine Tutorial

Andrew Finch brings us chapter 1 of The Italian Courtyard tutorial series. This series will show us how to create a basic game level portfolio piece.

NEW!!! Creating the Celeritas

Mike Hill kicks off this new series with the concept for our Spaceship. This concept will later be created in 3dsmax, Maya & Cinema 4D.

Stylizing A Toon Human

Jose Alves da Silva continues the **Stylizing A Toon Human** tutorial series with the focus this month on Posing & Texturing.



Editorial

Forget bonfires, fireworks and Halloween. What we have in store for you this month is truly exciting! We have said a fond farewell to some really great tutorial series, but as always that means we have some really great new content coming your way!

We will start this month with one of our new tutorials and with what will doubtlessly be one of the highlights of the year! Have you ever been sitting at your games console or PC thinking, I wish I could be making these games instead of just playing them. Well 3DCreative are happy to be presenting you with that opportunity in our Brand new Series 'The Italian Courtyard – Unreal Games Engine'. Many of you will remember Andrew Finch who helped us all with environment lighting a few months back, well Andrew works in the games industry and now shows us how to create a level for a computer game using the Unreal Development kit which can be downloaded for free. And to give you a taste of what can be done, Andrew has created a demo level that we can all download and explore to whet our taste buds!

As if that wasn't enough, we have another amazing new tutorial series starting this month, 'Creating the spaceship - The Celeritas'. This is a great series to guide you through a complete project, beginning this month with experienced concept artist Mike Hill. Mike will show us how to use some of the versatile tools in Photoshop to create a concept for a spaceship. In the following months this spaceship will be modelled and textured by Djorjie Jovanovic in 3ds Max, Luigi Terza in Maya and Tamás Gyermán in Cinema 4D.

Jose Alves da Silva has been treating us to a cartoon master class in his Cartoon human's tutorial series. Jose continues to provide valuable step by step advice, and guide us though the process of texturing his amazing character.

From human's to monsters, this month we continue or new series ZBrush monster creation. A lot of you may have seen some of the finished images from this series in some of the forums and will know that we are in for a real treat. This month it is the turn of Federico Scarbini to show us how he made his amazing Sewer Dwelling creature! Federico give a really detailed account of everything he did to create his image, from the concept stage through to the modelling and texturing. I am sure you will all agree this is a cracker!

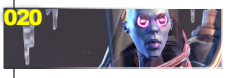
This month's interview is with Nicolas Crombez. Nicolas shot to fame with his amazing 100,000 pixel wide image called 'A Picture'. Nicolas is a fascinating artist, who creates fascinating worlds where music and 3D imagery combine. Nicolas has a very interesting way of looking at the world and 3D in general. This one is worth a read!

Our gallery is packed with great art this month, featuring work from Jungwon Park, Luis Nieves and Tamara Bakhlycheva, and we also have a really great making of from Adam Skutt.

Have fun!


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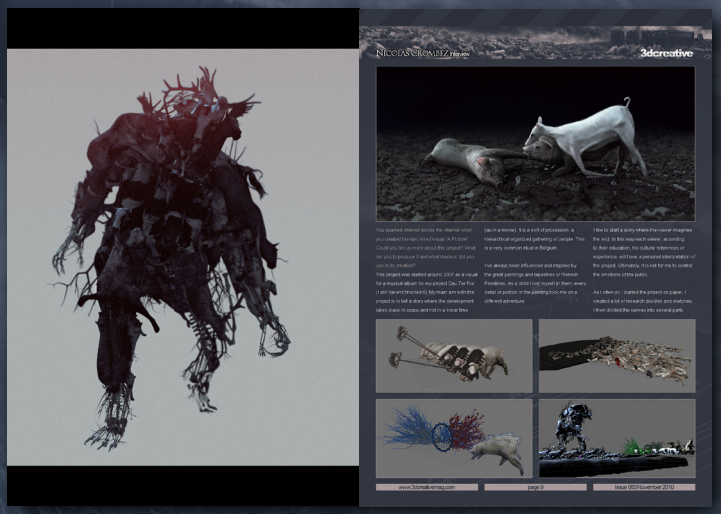




Get the most out of your Magazine!

If you're having problems viewing the double-page spreads that we feature in this magazine, follow this handy little guide on how to set up your PDF reader!







Setting up your PDF reader

For optimum viewing of the magazine, it is recommended that you have the latest Acrobat Reader installed. You can download it for free, here: DOWNLOAD!

To view the many double-page spreads featured in 3DCreative magazine, you can set the reader to display 'two-up', which will show double-page spreads as one large landscape image:

1. Open the magazine in Reader;
2. Go to the View menu, then Page Display;
3. Select Two-up Continuous, making sure that Show Cover Page is also selected.

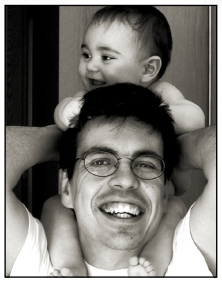
That's it!

Contributing Artists

Every month artists from around the world contribute to 3DCreative, and you can find out a little more about them right here! If you'd like to get involved in 3DCreative magazine, please contact: simon@3dtotal.com



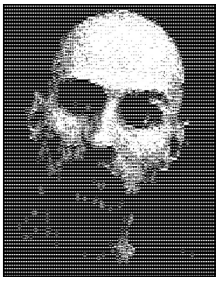
Jose Alves da Silva



Jose Alves da Silva has been working in the 3D field for over 15 years. Jose has a degree in Architecture but now works as a full time freelancer dedicated to his true passions - character creation and illustration. This has given Jose the opportunity to work on some spectacular projects in the feature film, advertising and gaming industries.

http://josealvessilva.daportfolio.com/

joalvessilva@netcabo.pt



Nicolas Crombez

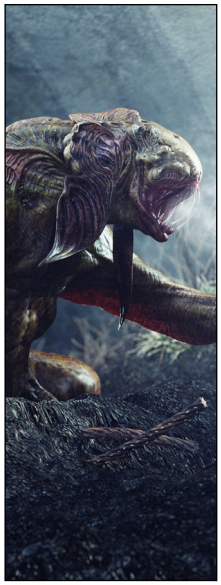
Nicolas Crombez is a universe explorer. He navigates using both images and music. For many years Nicholas loved to learn techniques rather than to explore the possibilities of using them, but now loves to use his technical abilities to their spiritual limits. He loves his wife, animals and strange music.

http://blam.cgsociety.org/gallery/

http://www.dehollander.net/

nicolas@dehollander.net





Federico Scarbini



Federico Scarbini is a self-taught character artist living in Italy. Federico has been trying to push his skills by studying anatomy, focusing on the organic forms and the expression of the human body. When sculpting he usually models from original concepts as he enjoys the creation. Federico is currently working as freelance character artist.

http://www.federicoscarbini.com/wp/

fede@federicoscarbini.com



Andrew Finch

Aged 27 and living in the great city of Birmingham in the U.K., Andrew has a degree in 3D Animation which inspired his passion for environment art. He now works as an environment artist at Rebellion, and says, "Working in the games industry is exciting: you never know what the next project will be and there's always something new to learn. This helps to keep you creative and grow as an artist." afinchy@googlemail.com



Would You Like to Contribute to 3DCreative or 2DArtist Magazine?

We are always looking for tutorial artists, gallery submissions, potential interviewees, 'making of' writers, and more. For more information, please send a link to your portfolio, or send examples, to: simon@3dtotal.com

3DTotal presents the new issue of 2DARTIST magazine: a downloadable monthly magazine for concept art, digital & matte painting for only £2.75 (approx $3.78 - €2.93)

2d artist

Concept Art, Digital & Matte Painting Magazine
Issue 058 October 2010

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Cover image By Roberto F Castro

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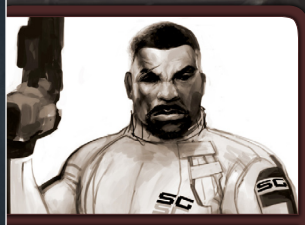
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Interview
Theo Prins

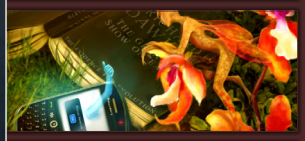
Articles
Sketchbook of James Wolf Strehle

The Gallery
Daarken, Andreas Rocha & Bradford Rigney plus more!

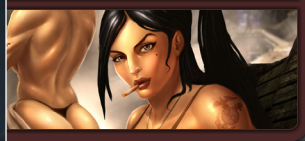
SCI-FI CUSTOM BRUSHES



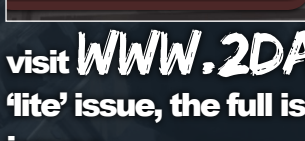
Roberto F Castro brings us the forth part in our **Sci-Fi Custom Brush tutorial series** by showing us how to create elements found in a futuristic corridor



Concept Art for Games
Bart Tiongson shows us how to create character concepts in the forth chapter of our **Concept art for Games** tutorial series.



Painting Creatures From Folklore
Nykolai Aleksander shows how she created he own interpretation of faeries in the second chapter in this tutorial series.



Superhot Female Marines
Alex Ruiz paints some battle hardened female marines in the forth chapater in our **Painting Futuristic marines** series.

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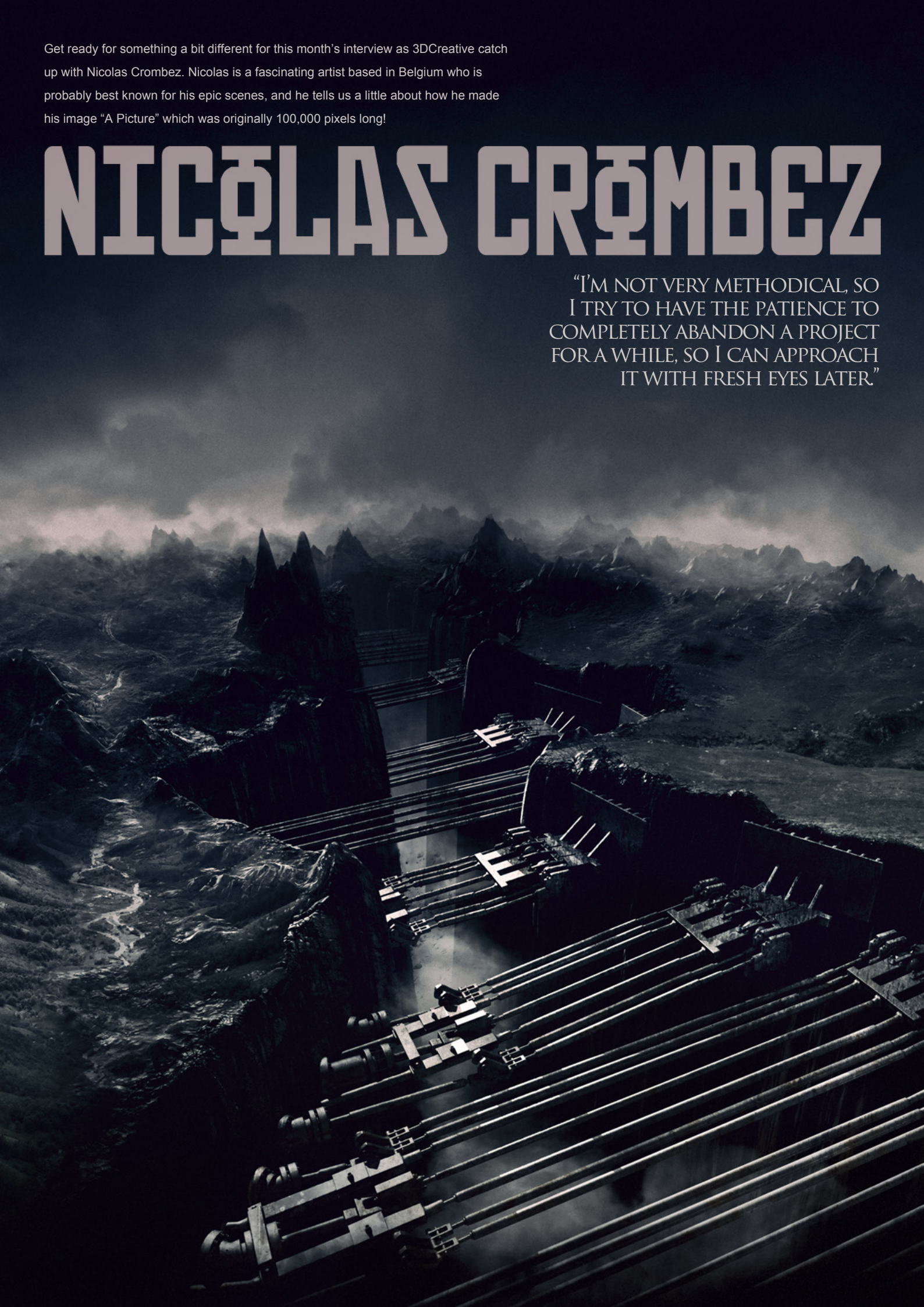
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Get ready for something a bit different for this month's interview as 3DCreative catch up with Nicolas Crombez. Nicolas is a fascinating artist based in Belgium who is probably best known for his epic scenes, and he tells us a little about how he made his image "A Picture" which was originally 100,000 pixels long!

NICOLAS CROMBEZ

"I'M NOT VERY METHODICAL, SO I TRY TO HAVE THE PATIENCE TO COMPLETELY ABANDON A PROJECT FOR A WHILE, SO I CAN APPROACH IT WITH FRESH EYES LATER."



INTERVIEW WITH NICOLAS CROMBEZ



Hi Nicolas, could you introduce yourself to our readers and tell us a little about how you first got started in 3D? Where did you study? And what your first job in the industry was?

My name is Nicolas Crombez. I started doing 3D on an Atari ST during the 80s. I then entered the Academy of Fine Arts in Tournai (Belgium) where I was trained on Imagine, then in around 1994 I moved on to LightWave (Amiga). I've never really worked in the industry exactly; I'm not interested. I come from a punky and alternative culture, and this is the way I want to live my life. I do however teach CG in an art school in Belgium.

So what happened in the 80's that led you to discover 3D?

Tron was a revelation for me and there were also video games such as *Ballblazer* or *Simulcra* that really excited my imagination. It was an immersion into pictures that I had never seen before. In the 80's 3D was a true technological innovation, and at the time the terms "innovation" or "revolution" were still very much restricted to a specialized audience and weren't in the hands of normal businesses. I was on the lookout for any progress in the field of popular 3D expansion and I discovered these mainly through print magazines and television. I naturally turned to studies in this domain.







You sparked interest across the internet when you created the epic sized visual “A Picture”. Could you tell us more about this project? What led you to produce it and what medium did you use in its creation?

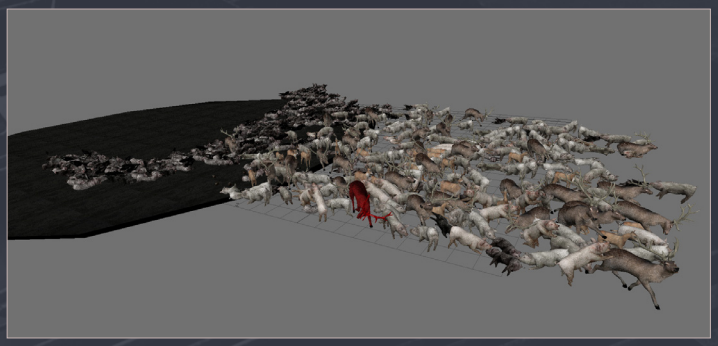
This project was started around 2007 as a visual for a musical album for my project Deu Ter Ror (I still haven’t finished it). My main aim with this project is to tell a story where the development takes place in space and not in a linear time (as in a movie). It is a sort of procession, a hierarchical organized gathering of people. This is a very common ritual in Belgium.

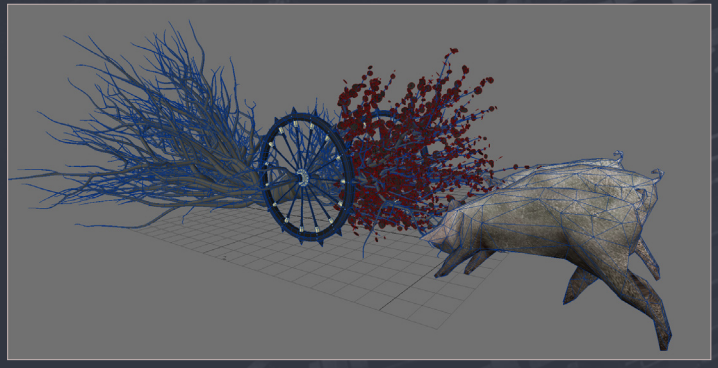
I’ve always been influenced and inspired by the great paintings and tapestries of Flemish Primitives. As a child I lost myself in them; every detail or portion of the painting took me on a different adventure.

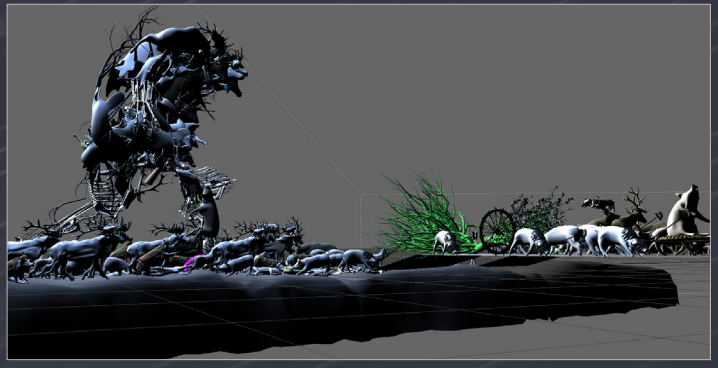
I like to start a story where the viewer imagines the end. In this way each viewer, according to their education, his cultural references or experience, will have a personal interpretation of the project. Ultimately, it is not for me to control the emotions of the public.

As I often do I started the project on paper, I created a lot of research doodles and sketches. I then divided the canvas into several parts





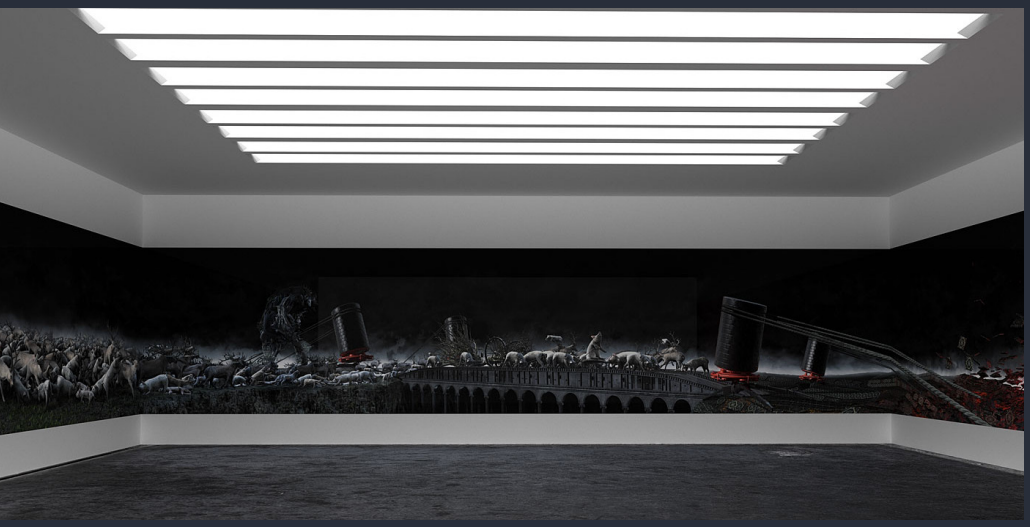














"I like to start a story that the viewer imagines the end. Each, according to his education, his cultural references or his experience, will have a personal interpretation of the project. Ultimately, it is not for me to control the emotions of the public."







please click this link to see the full size image: http://www.deuterror.org/dtr.html











and modeled each element (it took me many months). I made five different renderings in one pass. Then I separated the alpha and the various elements in Photoshop to restore a single file of hundreds of layers.

The last step was to paint over every hair, grass, and particle and enhance every detail. I also added the sky and made a general grading.

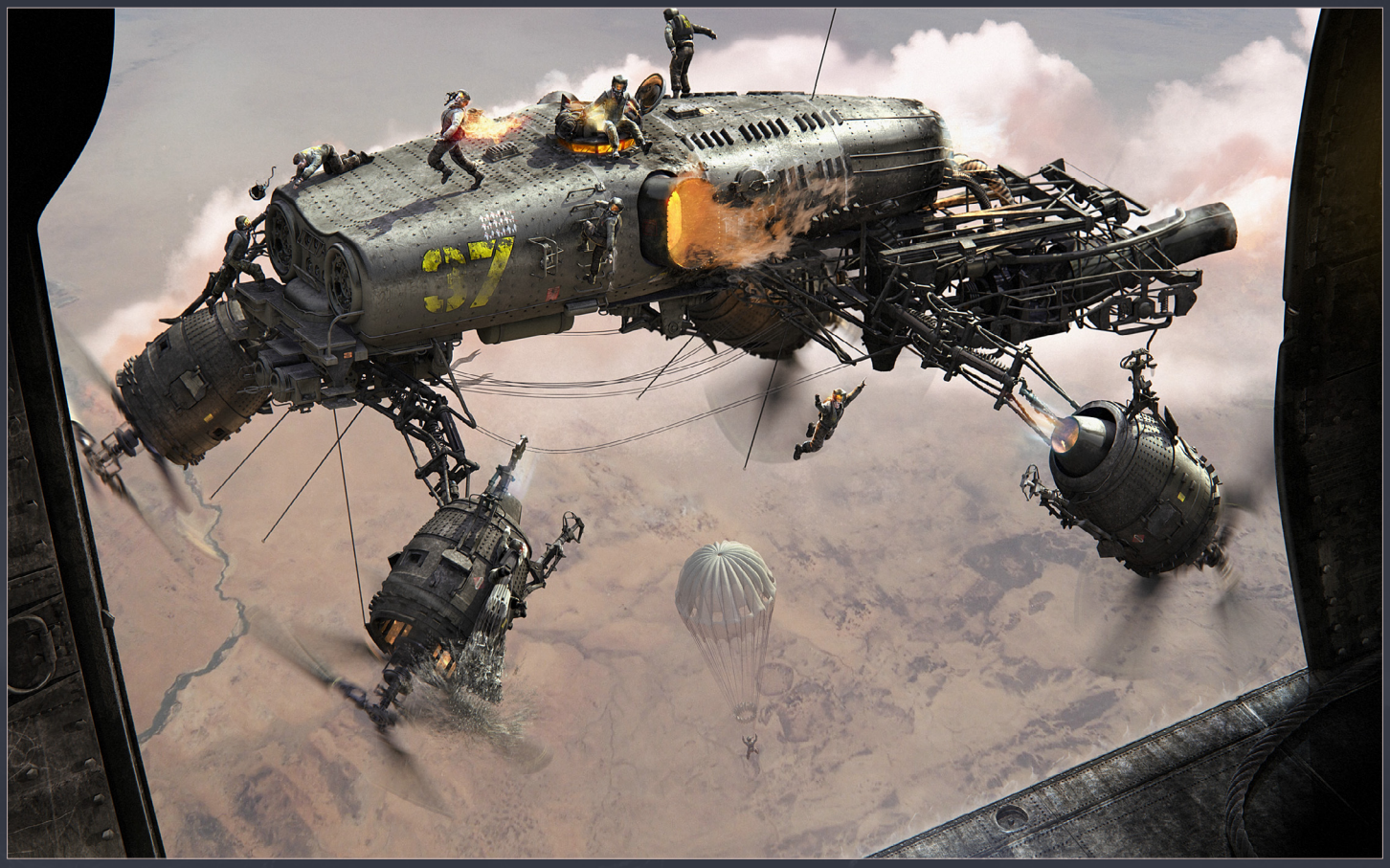
What were the reasons behind your choice of animals within your image?

I chose to use animals because I wanted to play on the differences between the animals, whose instincts push them, and their need to evolve. If you consider mankind in a similar way, our instincts inevitably led us to evolve both spiritually and materially. The animals are, in this sense, our instinct walking on the timeline of our own evolution. The link between the pigs, deer and other animals could also link to our different social classes.

Do you think you will tackle another epic scale image in the future? If so, how do you think the things you learned from creating “A Picture” will be useful to you?

I think not. At the time of its development this image was really meaningful to me and focused on a really important and fundamental point. I’ll move on but who knows, I could use the same technique again as I have not yet explored its full potential.





For the image “A Picture” I use the Daniel Gasienica tool: openzoom www.openzoom.org. I do not want to be someone who is expected to create a new “epic painting” in a systematic way, from the ashes of his last image. I hope this will give ideas to others, but I get bored quickly when in a routine.

Could you tell us more about Deu Ter Ror?

I realized early in my 3D career a need to create and develop worlds. As my personal preferences were changing, the Deu Ter Ror universe has been built accordingly. It allows me to depict reality and change its meaning through sound, image and word. In a very personal way I would say Deu Ter Ror is inspired from the root “of the Earth” (From the soil or from the Earth), I also consider the meaning of “divine terror” (Deus terror). My basic premise revolves around the faith and fundamental and immutable conviction that drives man to survive. On reflection I draw the conclusion that man cannot stop changing, confronting, capturing territory, equipment and knowledge, and that if man is to survive, it cannot be any other way. In that sense I do not consider this development as being either positive or negative. This seems to be an intellectual process, but ultimately it is a very instinctive thing. I have a carnal attachment to the soil, the source of my inspiration.

So what are your plans for Deu Ter Ror? Do you think the universe will continue to evolve in the future?

Certainly, I have many ideas and plans for Deu Ror Ter. I want to complete a new album because the project as a whole includes both images and sounds that make up a complete universe. I take a lot of pleasure in working in one domain and ultimately seeing the world grow.

So what are you currently working on?

Working on “A Picture” marked a turning point in my projects. Renewal is important to stop me from getting bored and I have many projects underway in my portfolio. I plan to finish an album that I began in 2007, but I’ve also started to practice traditional animation, an approach to creating a narrative that I do not really know much about.

Can you recall the most useful piece of advice that you’ve been given, whether it was from a work colleague or another artist?

I’m not very methodical, so I try to have the patience to abandon a project for a while, so I can approach it with fresh eyes later.

Well it has been a really pleasure talking with you and I wish you all the best for the future.

Thank you for your attention and for the exposure. I like the idea of sharing my world. Also I take pleasure in discovering other artists who probably inspired me one way or another.



Nicolas Crombez

For more work by this artist please visit:

http://blam.cgsociety.org/gallery/

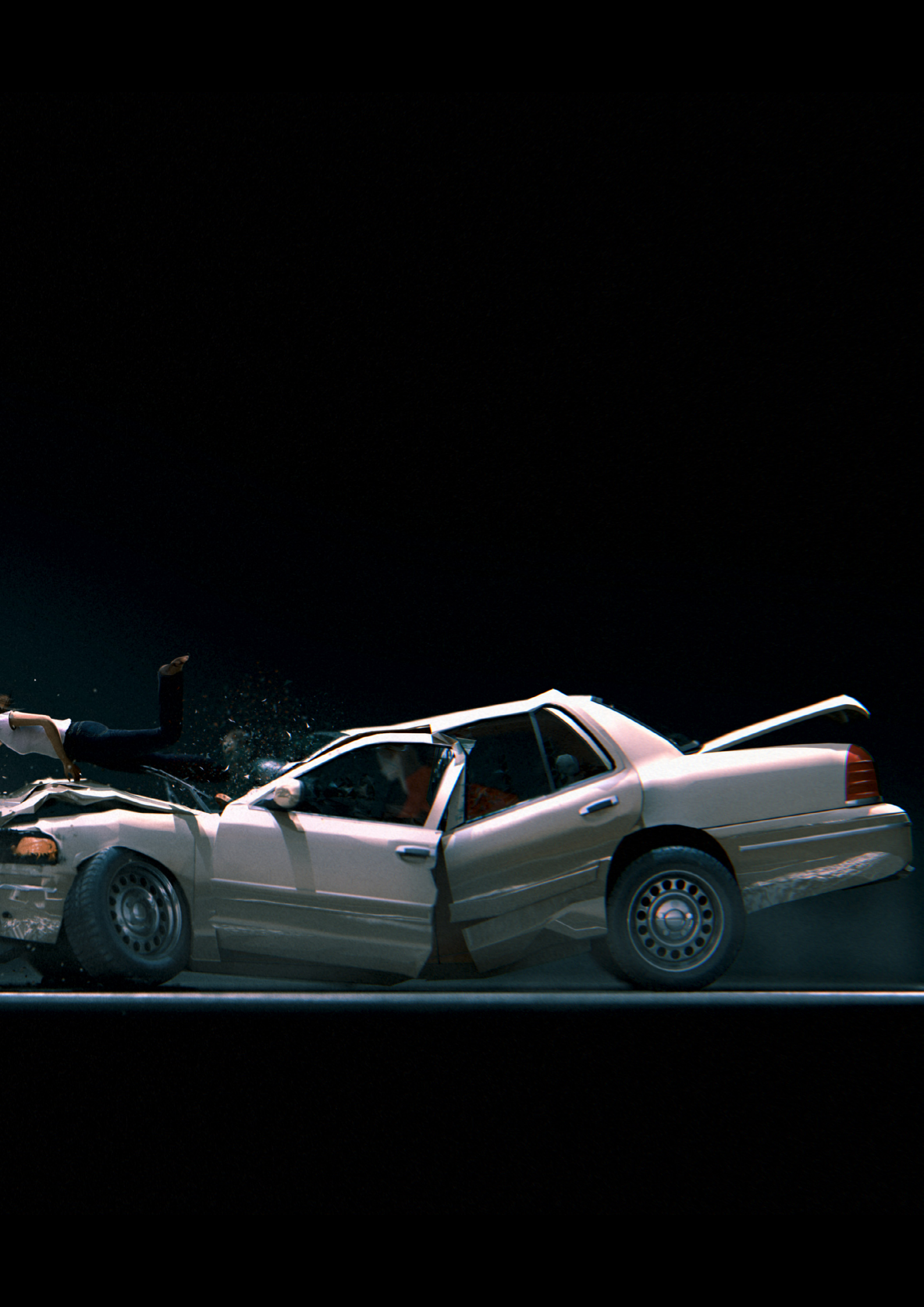
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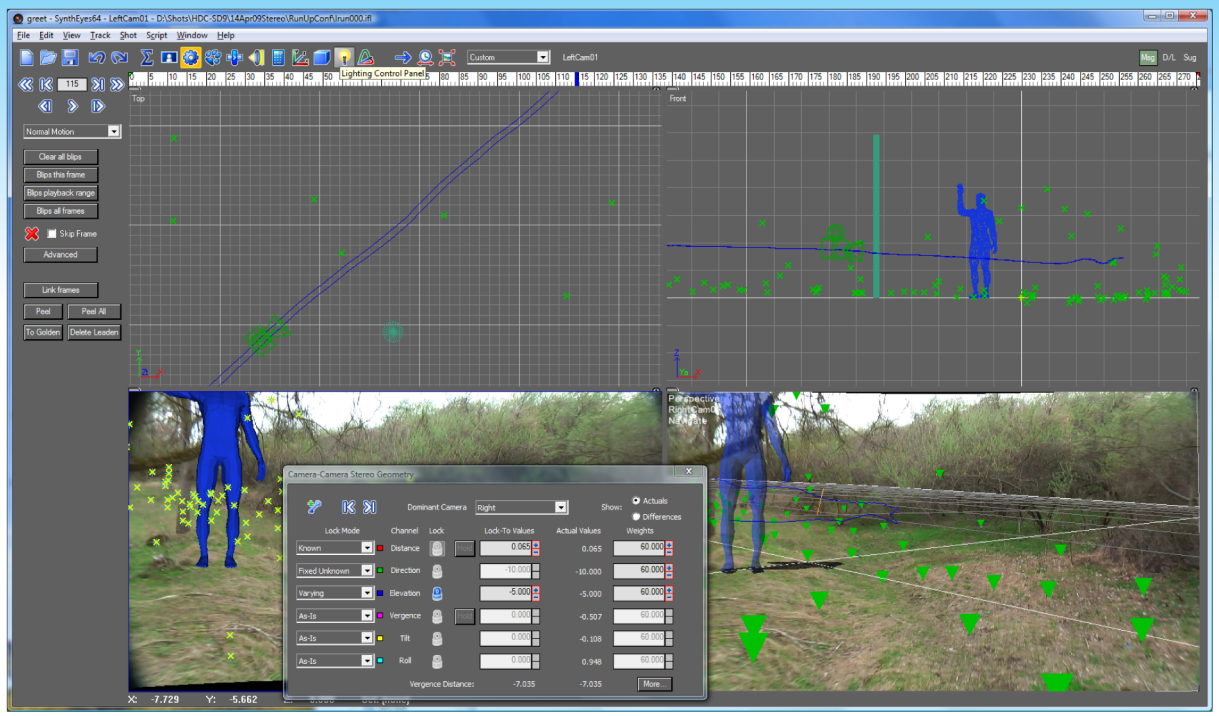
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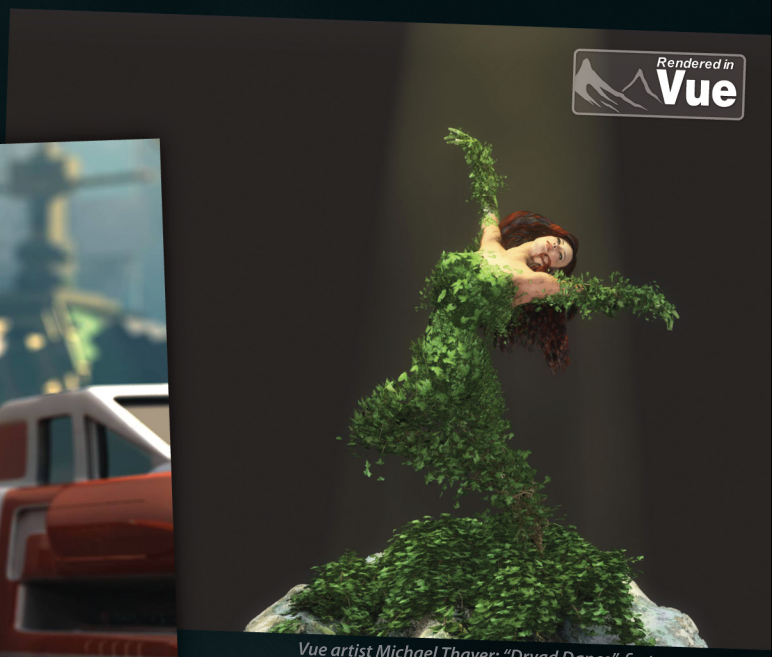
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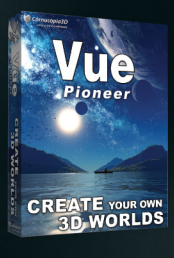
Vue artist Ryan Malone: "Reclamation", winner



Vue artist Michael Thayer: "Dryad Dance", first runner up



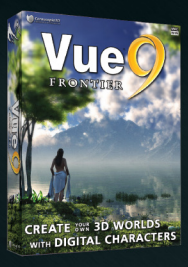
Vue artist Mats Molund: "Claudia", second runner up



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the gallery



This month we feature:

João Elias

Romain Chauliac

Jungwon Park

Exodo DW

Luis Nieves

Nicolas Garilhe

Tamas Gyerman

Tamara Bakhlycheva

Maarten Vehoeven

Daniel Karner



GT-40 IN VEGAS

Luis Nieves
www.lendesign.com/FordGT40/
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(Above)

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SUPER GIRL RETURNS!

Jungwon Park

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Map of the land of Varn
Sea of Varn
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Tamas Gyerman

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Back in 1991

Daniel Karner

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Christopher Lee

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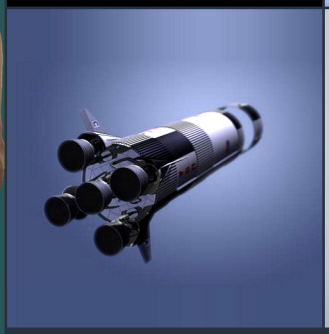
In this two volume series, Scott Patton shows the processes he uses to create a 3D character for feature films. The first volume explores Patton's fast and efficient method for concept sculpting, skipping the 2D sketch phase all together and designing the character entirely within ZBrush®. He covers everything from blocking out the forms and fleshing out the muscles, to adding props, detailing with alphas and posing the character. The second volume covers methods for creating a final color rendering using ZBrush and Photoshop®. Patton shows how he squeezes the most from ZBrush's powerful renderer to create both a wide and close-up shot of the character. He then shares creative Photoshop tips and tricks to quickly get to a finished piece of concept art from the ZBrush renders, covering topics such as adding and refining skin texture, hair, eyes, shadows and scars. Patton also discusses how to create backgrounds that enhance the character and overall composition.

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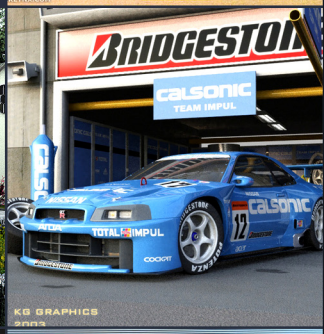



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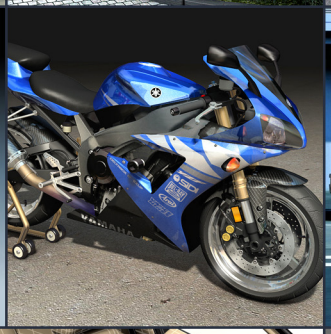
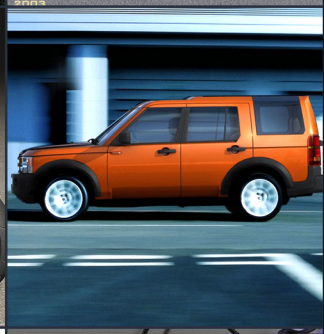
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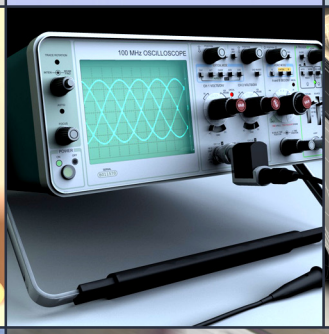




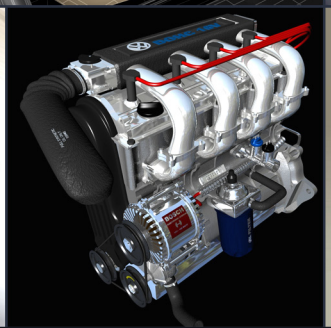










CREATING THE CELERITAS

SPACESHIP MODELING & TEXTURING



CHAPTER 1 | THIS ISSUE
Concept

CHAPTER 2 | DECEMBER ISSUE 064
Modeling the Low-Poly Version

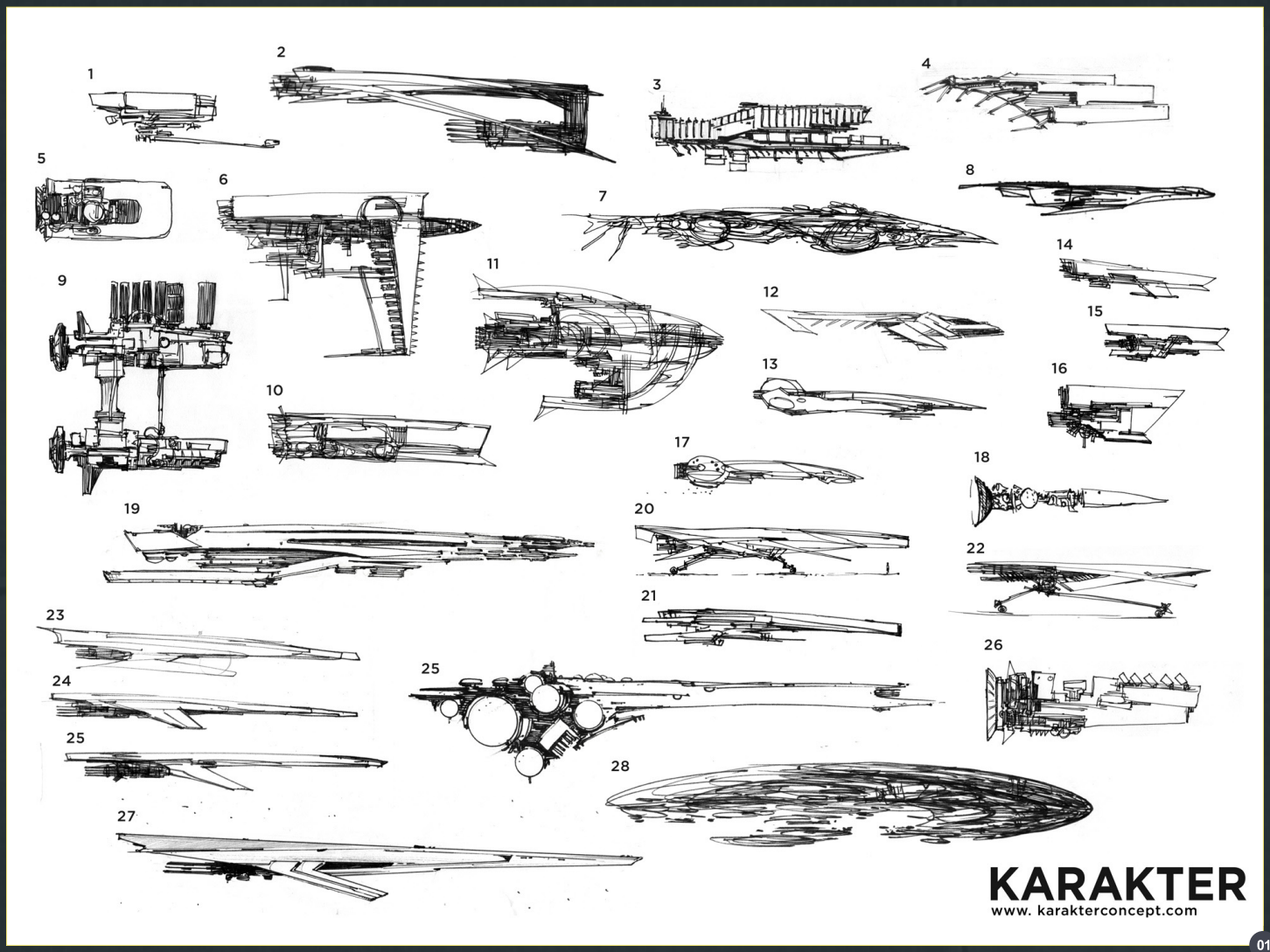
CHAPTER 3 | JANUARY ISSUE 065
Modeling the High-Poly Version

CHAPTER 4 | FEBRUARY ISSUE 066
Mapping and Unwrapping

CHAPTER 5 | MARCH ISSUE 067
Texturing

CHAPTER 1 - CONCEPT

In this fascinating tutorial series our artists will be guiding us through the creation of a complete spaceship in a scene, from beginning to end. We begin the series in Photoshop, using some of its excellent features to help create a concept, a vital process for anyone hoping to come up with an original design. That design is then passed on to our team of modelers who cover the stages of low and high poly modeling, texturing and post-production. This series is filled with tips to help during all of the stages leading up to the creation of an amazing sci-fi scene with an original spaceship.



01

CREATING THE CELERITAS CHAPTER 1 - CONCEPT

Software used: Photoshop

This article is designed to show the general workflow for developing ideas and designs for a spaceship. In a normal commercial project the contextual requirements would be the starting points for the design. In this case I was given completely free reign, with no requirements other than make a “cool” space ship.

With this in mind, I tried to just explore lots of different shapes and design options.

I started by first going completely crazy with thumbnail sketches (**Fig.01**). This stage can happen in a sketchbook or directly into Photoshop, but in the end it always goes into Photoshop, meaning that if you have sketched it on paper it should be scanned in.

In these early stages there are a few techniques that can be very useful in Photoshop to help you to create interesting concepts that you may not have thought of. For example taking elements from photos, and then cropping and reshaping them, is a great way to obtain original and interesting features.

Another great way of exploring your concepts in Photoshop is by flipping the contents of the layers on their horizontal and vertical orientations. Again this can sometimes open up a fresh idea that you may not have intended. The Flip tool is one that is used regularly to generate new and original concepts, but this can also be used together with our cropped and adjusted designs. You can see all of these techniques and how the can be used to create a previously color of concept in **Fig.02**.

This is perhaps something that 3D artists may be familiar with, as the same principle applies to 3D techniques. Many of you will take some basic geometry and play with modifiers such as Stretch, Taper, Bend, Twist and Spherize to generate something original (**Fig.03**). It is the same principle in Photoshop.

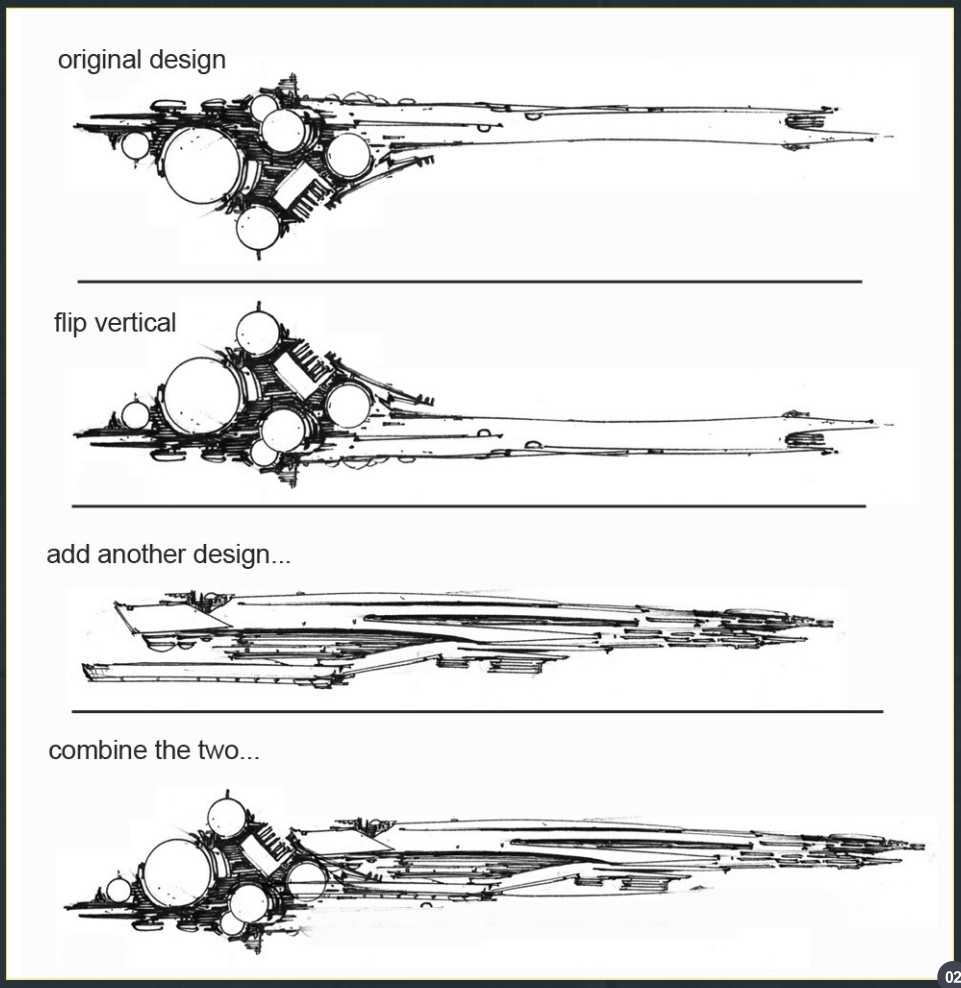
Again you can do the same in 3D as you would in Photoshop. You can put some of the geometry together into certain configurations, and you will find that all sorts of ideas can take shape very quickly!

In **Fig.03** you will see that by only using cylinders and spheres you can generate ideas such as these in a matter of minutes. With time and experimentations, interesting shapes can come about really quickly!

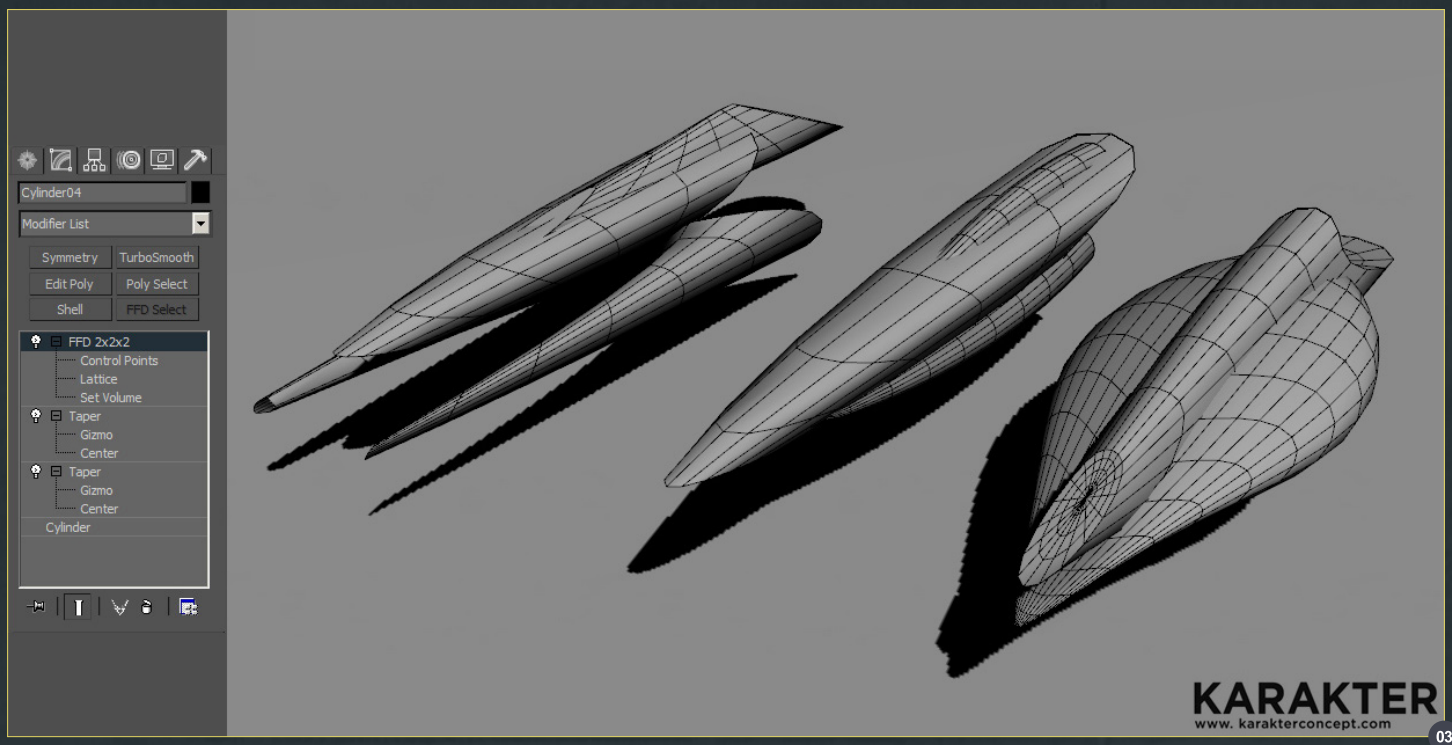
If you go back now to the thumbnails that I've been playing with in Photoshop we can look at the designs and check to see if they fulfil basic design requirements. Firstly, does the design stand out as recognisable on the very first viewing? This should be clear even on the thumbnail. Is the design clear and understandable, even from a distance? Consistent forms: does the design have a consistency in the language of the shapes... or if it doesn't have consistency, does the contrast of different shape language contribute to the design, or make it look silly?

With these specifications in mind I found designs 20, 25 and 27 the most interesting visually! This is a very quick and easy process that can be done in Photoshop without even touching any 3D programs.

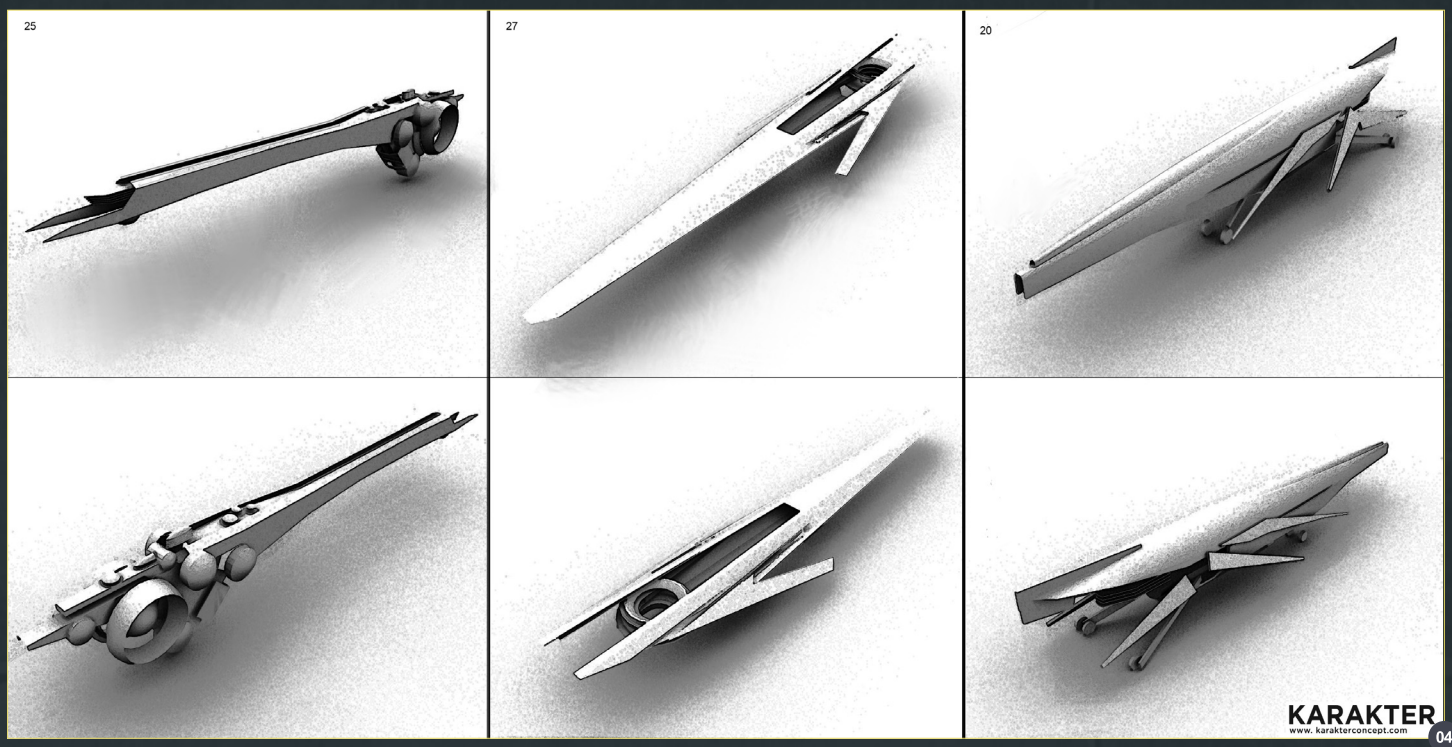
We use several ways of approaching the next stages at the concept design studio I work for, Karakter. In this instance I have utilized 3D. This is in order to show that it is not just 2D artists who can be involved with the design process. The thumbnail stage shows important design elements and is a great way to create concepts quickly and is all in all a great starting point.



02



03



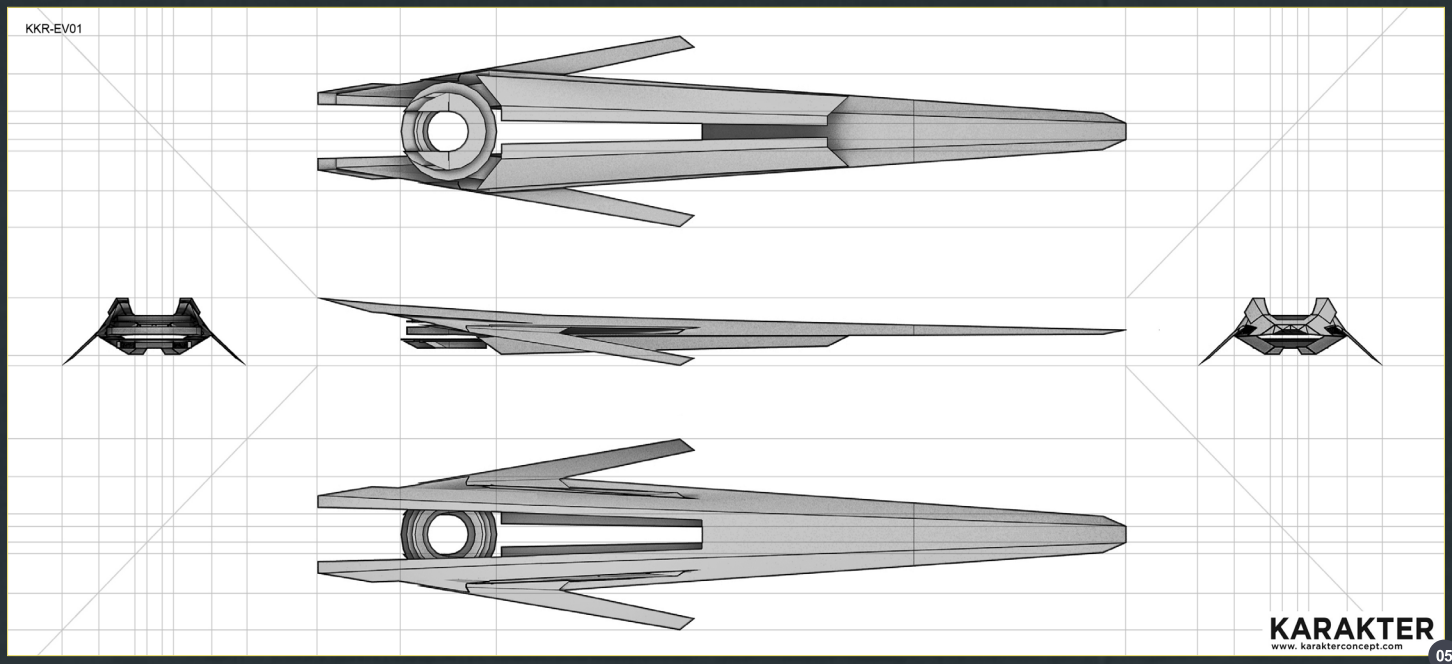
04

However it does have a downfall; it cannot show depth or volume! A few very rough 3D blockouts of my favourite designs allowed me to see the potential of the 2D designs in 3D space (**Fig.04**). There are several reasons why this is a really beneficial method of working.

Firstly, the designer gets the opportunity to understand the proportions from all angles. Sometimes a profile view can look great in 2D, but won't make sense when viewed from a variety of angles. By doing a 3D mock up version, it allows the designer to connect all the elements of the concept together into a cohesive design.

From the blockouts I felt that design 27 was the most interesting visually. I took the basic Ambient Occlusion render and then focused on getting together a selection of reference. Collecting references is very important when getting a feel for the aesthetic of the design, and providing a direction for development. 3DTotal have great texture and reference library which can be found at: http://freetextures.3dtotal.com.

The references are there to give ideas for materials, construction methods, technology, colors! All the little bits and pieces that will make a design come together. These references can be used in Photoshop at the concept stage, as they can be cropped, warped and adjusted to help develop ideas.



05



Orthographic projections can then be taken of the design to give the modeler a rough but accurate base for a model (**Fig.05**)! This step allows the concept artist to guarantee that the modeling stage will have solid foundations, which is very important as every concept artist wants to see his concept developed to its full potential.

Then using a mixture of hand painting and photo overlays I attempted to breathe a little life into the design (**Fig.06**)! The concept is generally kept rough as good modelers can often bring their own interpretations to a design, which are more informed when working with a developed model. At the end of this process you will have a great base to work from (**Fig.07**)!



MIKE HILL
For more from this artist visit:
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STYLIZING A TOON HUMAN

The aim of these tutorials is to provide an efficient and methodical approach to creating Animal and Human Stylized Cartoon characters. These tutorials will give a detailed explanation of how to create your character from the concept stage through to the modeling, posing and texturing. The first three chapters of the series will be focussed on creating an animal character with the second three focussed on the human character.



Animal

Chapter 1 | June Issue 058
Concept & Modeling

Chapter 2 | July Issue 59
Posing & Texturing

Chapter 3 | August Issue 60
Materials & Lighting

Human

Chapter 4 | October Issue 062
Concept & Modeling

Chapter 5 | This Issue 063
Posing & Texturing

Chapter 6 | Next Issue 064
Materials & Lighting

How to Stylize and Model 'Toon Humans' Chapter 5 - Posing & Texturing

Software used: 3ds Max & ZBrush

Introduction

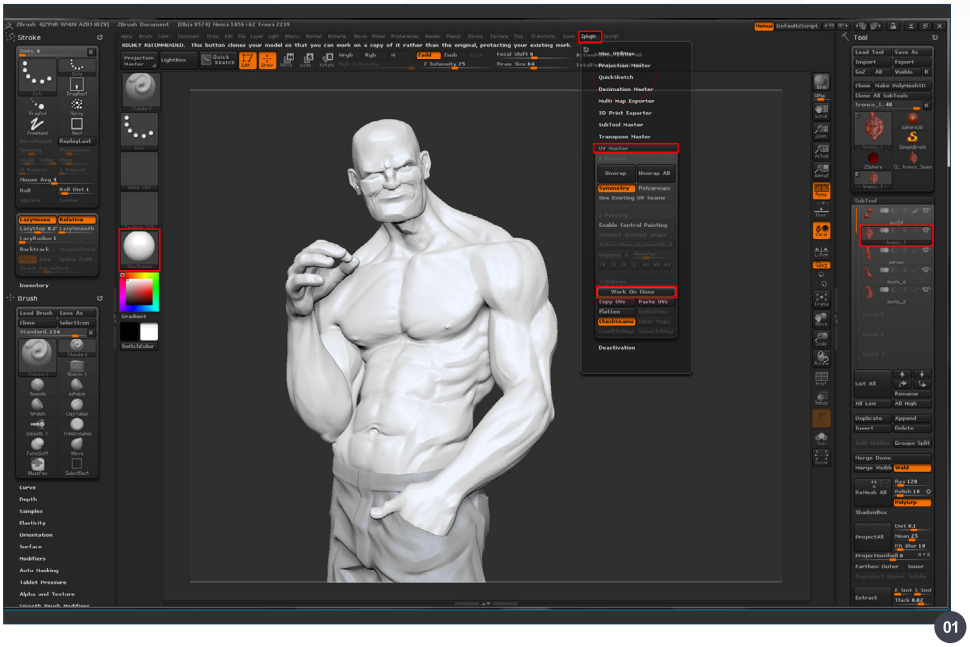
The previous chapter was dedicated to modeling the character. In this chapter we will handle the UV mapping as well as the creation of the textures. We will also model the character's belt in 3ds Max, UV map and texture it.

Make sure that GoZ is configured in ZBrush 4 to communicate with 3ds Max, because we will be taking advantage of this new feature to exchange information between the two applications.

UV Master 1

ZBrush has a very simple tool to create UVs – the UV Master. It's a free plugin that you can download from Pixologic.

In this chapter we will be using the Material "SkinShade4". It is a white material which is great for Polypainting because it doesn't affect the painted color and it also shows specular highlights which help to read the form. Select it from the Material menu to have it applied (**Fig.01**).


01

- Select the upper body subtool.
- From the Zplugin menu, choose UV Master.
- Click on Work on Clone. UV Master will create a new tool with the upper body at the lowest subdivision level. The new tool starts by the prefix "CL_".

UV Master 2

We will use a polygroup selection to define the UV islands.

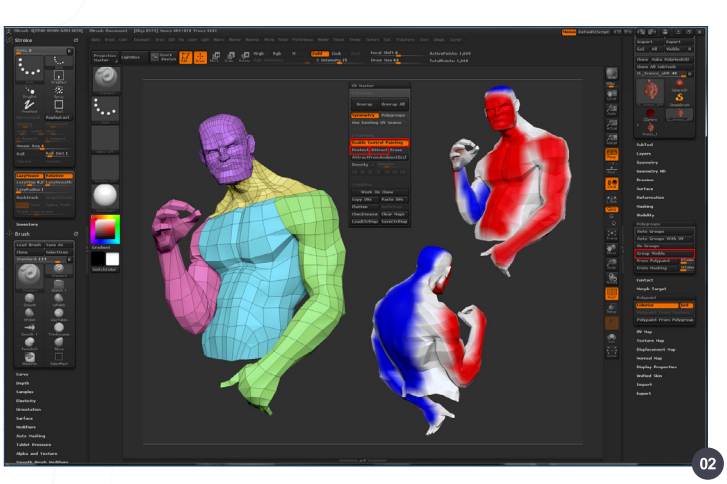
- Create the polygroups as in **Fig.02**, separating them as head, neck, trunk, left arm and right arm.
- In the UV Master menu choose Enable Control Painting.

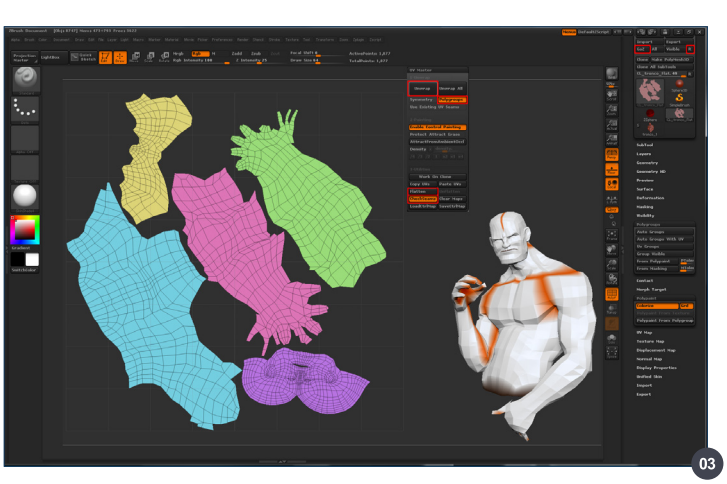
By clicking the Protect or Attract buttons under Enable Control Painting you will be able to paint the surface in red, to define the areas that should not have seams, and blue to attract those seams. The UV Master does not allow you to specify exactly where you want the seams. If you need that kind of control you should use an external tool to create the UVs.

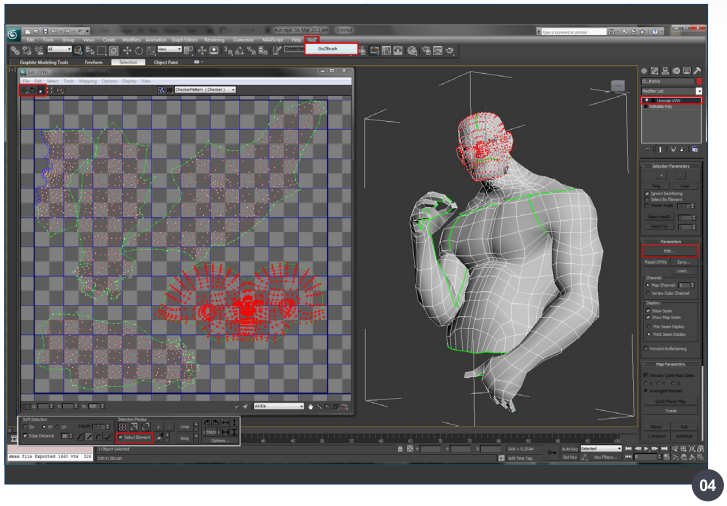
- Choose the Protect button and paint the face, chest and the outside of the arms.
- Choose Attract and paint the inside of the arms, the back and the back of the head.

UV Master 3

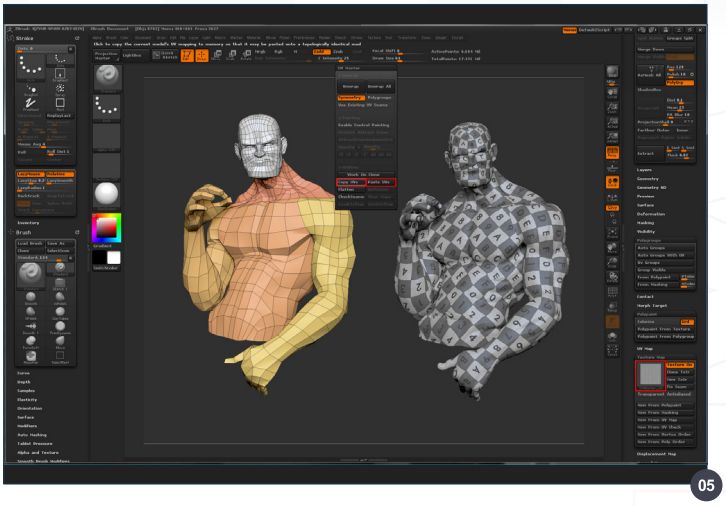
- In the UV Master, disable Symmetry and enable Polygroups.
- Click Unwrap. ZBrush will generate the UVs (**Fig.03**).
- To see the flattened UVs press Flatten. Choose Unflatten to go back.
- To check the seams press Check Seams and they will be displayed in orange.


02


03



04



05

For a finer adjustment of the UVs we can export this model to 3ds Max.

- From the Tool menu, press the GoZ button (Make sure the selected application is 3ds Max. You can change it by pressing the R button in front of the GoZ button).

EDITING UVS

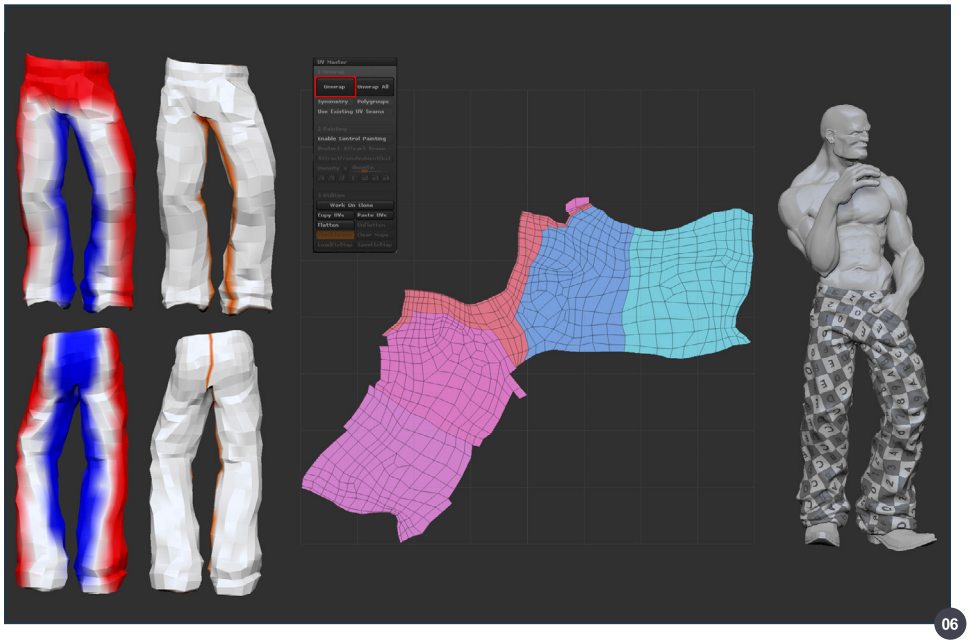
- 3ds Max will be automatically launched with the model in the scene.
- Select the upper body mesh.
- Choose Unwrap UVW from the modifiers list.
- In the Unwrap UVW press Edit.

You can now modify the UVs in an easier way than inside ZBrush (**Fig.04**). I wanted to give more UV space to the head than the rest of the body as this is a very important area of the character. To do this:

- In the Edit UVWs window enable Select Element under Selection Modes. This way by selecting a single vertex/edge/face you will select the whole UV island.
- Select the head UVs and scale them up to about the double of the original size.
- Select, move and rotate all the islands so that everything fits inside the UVs limit.
- When finished go to the top bar and in the GoZ menu choose GoZBrush.

UV MASTER 4

ZBrush will show the updated mesh. If you use the Flatten option in the UV Master plugin you will notice that the UVs are updated.



06

We are still working on the Cloned tool, so we will have to copy the UVs to the original model.

- In the UV Master menu click on Copy UVs.
- Select the original tool and make sure that the upper body subtool is selected.
- In the UV Master menu click on Paste UVs.

In **Fig.05** I have applied a checkered image that comes with the UV Master plugin as a texture map, to verify the UVs.

UV MASTER 5

We will repeat the procedure (minus exporting to 3ds Max) to texture the trousers and one boot.

- Select the trousers subtool.
- In UV Master choose Work on Clone
- Choose Enable Control Painting and paint the attraction areas on the back of the trousers and interior of the legs. Protect the remaining areas, as in **Fig.06**.
- In the UV Master disable Symmetry and Unwrap. Copy the UVs from the clone and Paste the UVs to the original subtool.

UV MASTER 6

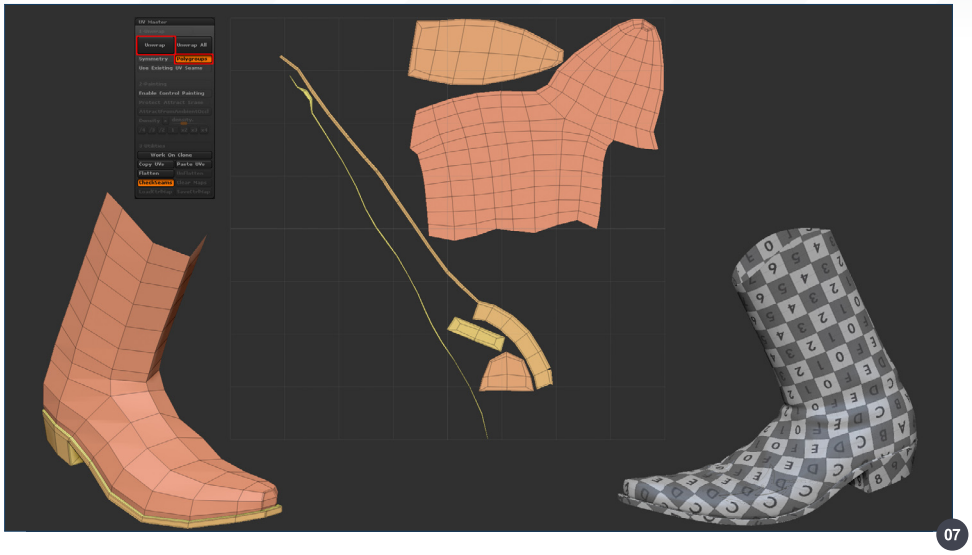
- Select the right boot
- In UV Master choose Work on Clone.
- Disable Symmetry and enable the polygroups, in order to split the boot in its different parts in the UV coordinates.
- Unwrap. Copy UVs from the clone and paste them to the original subtool (**Fig.07**).

We will not map the other boot as we will clone the final object in 3ds Max to create the left boot.

Polypaint 1

We will now initiate the painting of the skin. As we will use polypaint, the color information is stored in the vertexes of the geometry. This means that the denser the mesh, the higher the detail of the polypaint. I have increased the total subdivisions to 7 (which resulted in 6.6 million polygons, in my case). To achieve a realistic skin we will paint the skin in layers, using a noisy airbrush to achieve the variation of color that we are used to seeing in the skin.

- Select the upper body subtool.
- Choose the Standard brush.
- In the top menu disable the Zadd button and enable the RGB button (**Fig.08**).
- Choose the Spray stroke and in the Stroke menu change the Color slider to 0.1, so that there is less color variation.
- Choose the Alpha "Alpha07".
- In the color picker, choose a red color.



07

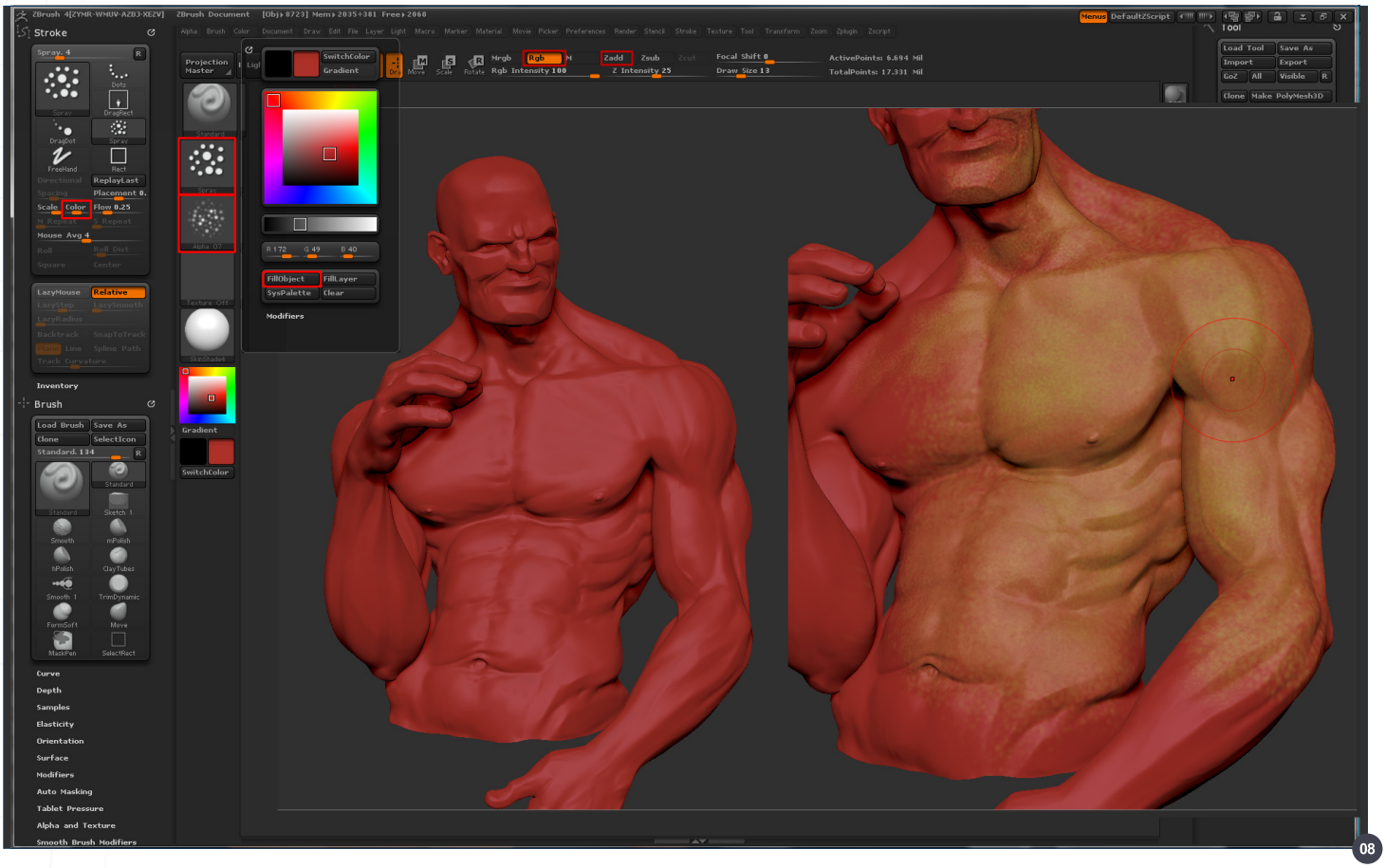
- In the Color menu choose FillObject. The object is now completely red.

We will be painting what is happening under the skin, so it is important to represent the areas with cool and warm colors as well as the veins that can be seen through the skin.

- Choose different tones of yellow and orange and paint the surface randomly to create a noisy base on top of the red color.
- Change the brush size to achieve different sizes of noise.

Polypaint 2

- After creating this base, choose a blueish gray and, using the same brush, paint the areas where hair grows from with more density: the scalp and the beard.
- Also paint under the eyes with a cold color.



08


09


10

- Change the color to a reddish pink and paint the ears, inside of the eyes, the cheeks, the lips and the tips of the fingers. These are the typical red areas (**Fig.09**).
- Change the brush Stroke back to Dots and disable the Alpha.
- Choose a blueish gray and paint the veins underneath the skin. Don't be too shy with this, make them clearly visible. Remember that we are painting what is going on underneath the skin.

Let's convert this polypaint to a texture.

- In the Tool menu, under UVMap, increase the UV Map Size to 4096.
- In the Tool menu, under Texture Map, click on New from Polypaint. A texture will be generated.
- Press Clone Txtr. The texture will be sent to the Texture menu.
- In the Texture menu, press Export and save the image as "body_subdermal.PSD".

POLYPAINT 3

- Save the Tool as you might want get back to it later.

We will paint the outer skin on top of the subdermal polypaint we have made. This will make the skin look a lot more natural as the information below the skin will be seen (**Fig.10**).

- With the Standard brush in Spray mode and using Alpha 07 as before, choose a light salmon color.
- Lower the RGB Intensity to about 24, so that we will paint with a low opacity.
- Paint on top of the existing colors using little pressure and cover the previous paint unevenly so that you can still see the veins below.
- Change the brush Stroke back to Dots and disable the Alpha.
- Choose a white color and paint the nails leaving some of the color underneath to make it look more natural.

Convert this polypaint to a texture as before and save the image as "body_epidermal.PSD".

EXPORTING MAPS 1

We will now generate cavity and occlusion textures to help us in the creation of the final textures. I will exemplify the procedure for the upper body.

- In order for this to be clear go to the Polypaint menu in the Tool menu and disable the Colorize button. This will hide the Polypaint.
- Go to the Masking menu in the Tool menu and click on Mask by Cavity.
- Convert the masking to a texture by going to the Texture Map menu and clicking New from Masking (**Fig.11**).
- Press Clone Txtr and, as before, save this texture from the Texture menu with the name "body_cavity.PSD".

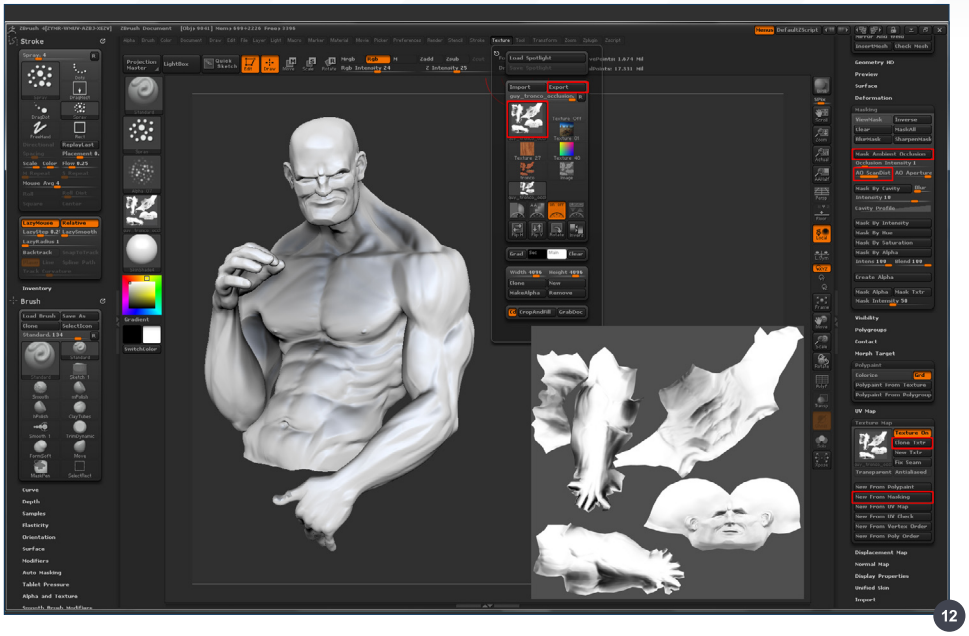
For the occlusion texture:

- Go to the Masking menu in the Tool menu.
- Increase the AO ScanDist to 0.5
- Click on Mask Ambient Occlusion. If the


11

procedure takes too long, you can lower the subdivisions of the geometry to make it faster, but the map will be less detailed (**Fig.12**).

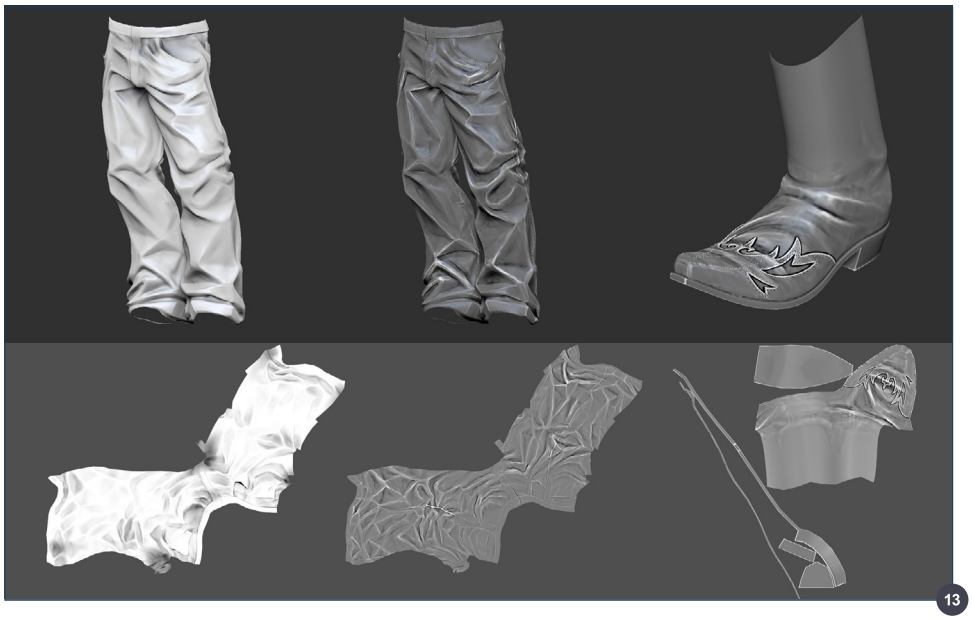
- Convert the masking to a texture by going to the Texture Map menu and clicking New from Masking.
- Press Clone Txtr and, as before, save this texture from the Texture menu with the name "body_occlusion.PSD".



12

Exporting maps 2

- Select the trousers and, repeating the procedure described before, create occlusion and cavity textures. Save them as "trousers_occlusion.PSD" and "trousers_cavity.PSD".
- For the boots create only the cavity texture and save it as "boots_cavity.PSD" (**Fig.13**).

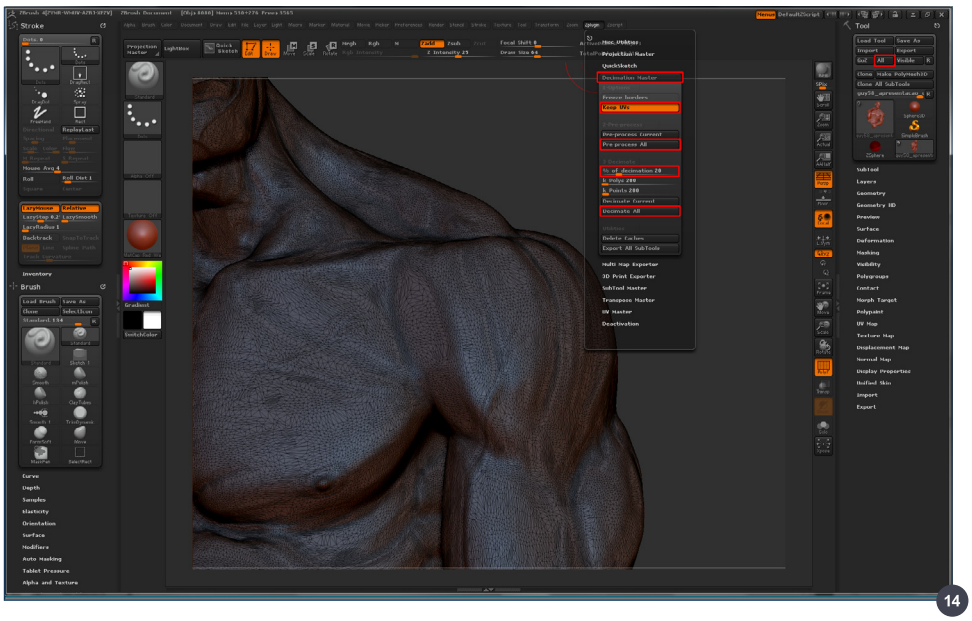


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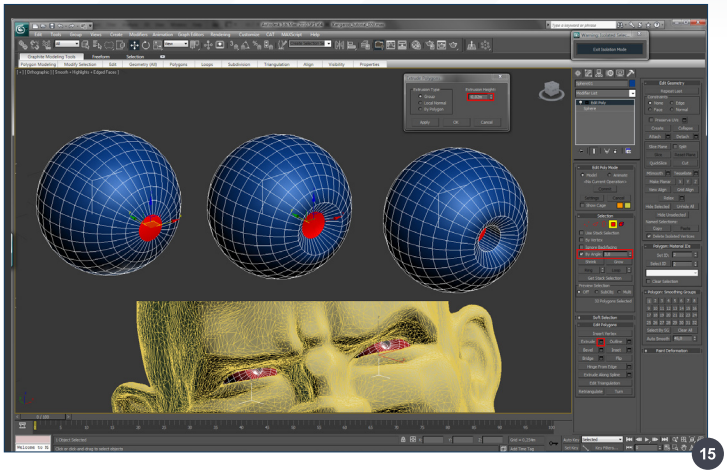
Exporting model

In order to export the model to 3ds Max, we will first reduce the polygon count of the model. For that we will use the Decimation Master tool (also available for download at Pixologic) which will reduce the number of faces by transforming the surface into triangles while trying to keep the detailed areas (**Fig.14**). Always save before decimating.

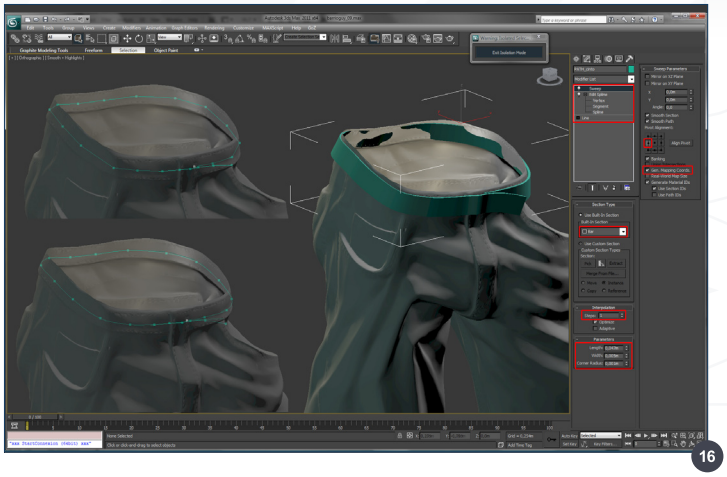
- From the Zplugin menu choose Decimation Master.
- Enable the Keep UVs option, so that the UV coordinates are not destroyed in the process.
- Choose Pre-process All. This will prepare the mesh for decimation, so that later you can define the reduction percentage. This will take some time.
- When this process is complete, reduce the % of decimation to about 5%. This will mean that your model will have 5% of the total number of faces it had initially.
- Choose Decimate All. All the subtools will be optimized. If you press the PolyF button (Shift + F) you can see the new mesh made of triangles.



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- To export the model to 3ds Max press the All button in front of the GoZ button. 3ds Max will open with the full model.

Model the Eye

In 3ds Max, model a simple eye as in the kangaroo tutorial.

- Create a primitive sphere and place it roughly at the eye socket.
- Add an Edit Poly modifier and pick the polygons that represent the pupil. You can do this quickly by restricting the polygon selection to be By Angle with a value of 3,0 and clicking one of the pupil polygons.
- Move the selected polygons inwards to create a recessed iris.
- Pick the Extrude Dialog box and set the value to extrude the pupil inwards.
- Apply a UVW Map modifier as Spherical. Change the UV alignment to X, and if necessary rotate the gizmo so that the map seam is on the opposite side of the pupil.
- Place the eye on the character's face (**Fig.15**).

To create the cornea:

- Clone the eye object as a copy and name it "eye_cornea".
- Delete the Edit Poly and UVW Map modifiers from the stack.
- Change the sphere radius to be slightly bigger than the eye.
- You can press Alt + X to make the object transparent on the viewport, making it easier to see where the character is looking at.

Model the Belt 1

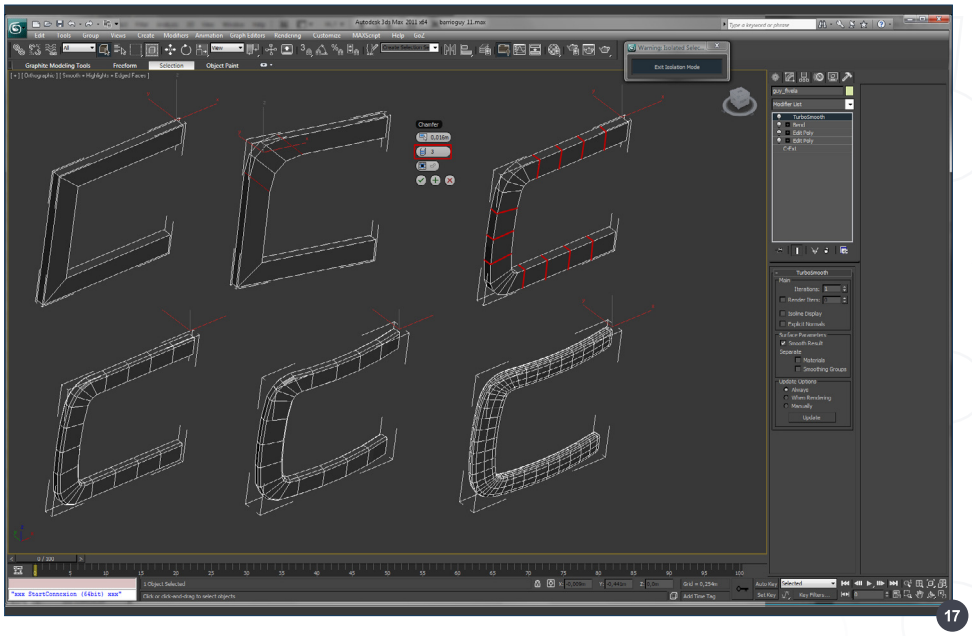
To model the belt:

- Start by creating a line around the waist with several vertexes.
- Make sure the line goes around the full waist and leave a looser bit at the end to simulate the tip of the belt. Also deform the part of the belt where the buckle will be; you can adjust it to perfection later.
- Apply a Sweep modifier with the built-in section set it to Bar.
- Set the interpolation steps to 1.
- Adjust the length and width to create a tall rectangle. In my case it had 0.047 m by 0.005 m.
- Set Corner Radius to 0.001m.
- Change the Pivot Alignment to the middle left position.
- Make sure that Gen Mapping Coords is ON (Fig.16).

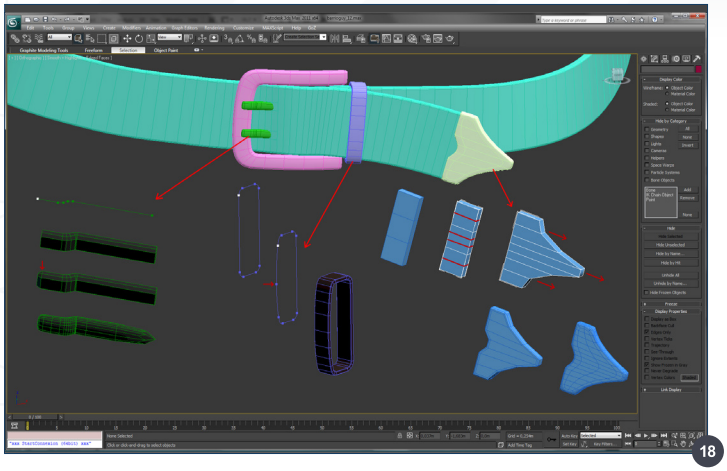
Model the Belt 2

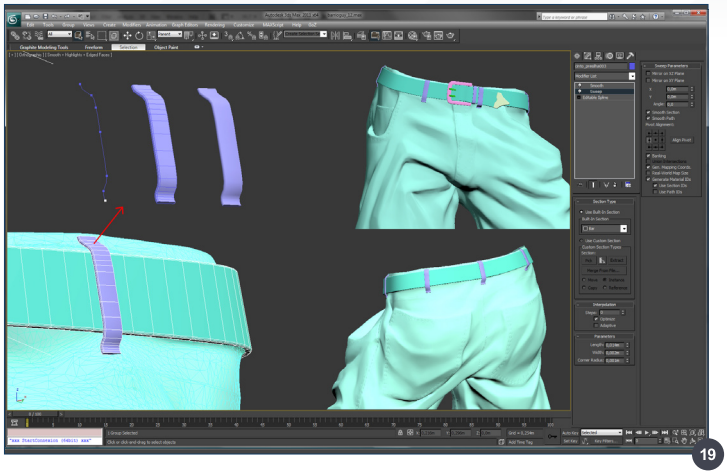
To model the buckle (**Fig.17**):

- From the Extended primitives, create the C-Ext primitive to create a C shaped object.
- Apply an Edit Poly modifier. Select the corner edges and use Chamfer with three steps. Adjust the vertexes to create some nice curves at the corners. Create some edge loops on the three sides of the buckle to allow it to bend.
- Select the edges of the buckle and apply a small chamfer to catch highlights.



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- Apply a Bend modifier to curve the buckle.
- Apply a TurboSmooth modifier to subdivide and smooth the buckle.

Model the Belt 3

To create the buckle pins:

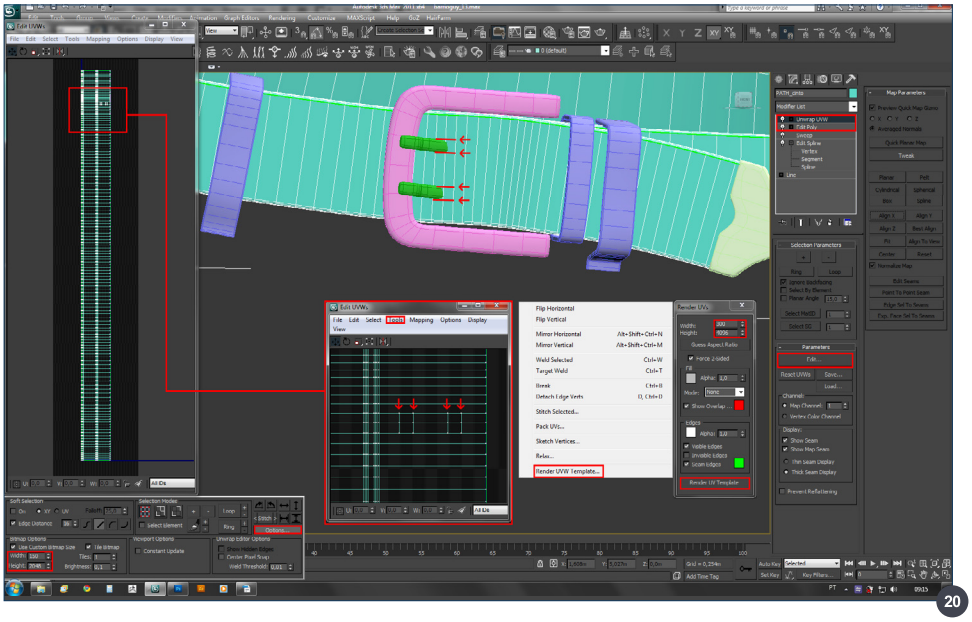
- Create a line as in **Fig.18**.
- Use a Sweep modifier with a Bar section. Use the Corner radius value to chamfer the edges.
- With an Edit Poly chamfer the edge at the tip of the pin.
- Apply a TurboSmooth modifier to round it.
- Clone it to create the second pin.

To create the belt loop:

- Create a rectangle shape with some corner radius to make the corners round.
- Apply an Edit Spline modifier to make the loop rounder at the front.
- Apply a Sweep modifier with a Bar section.

To create the belt tip:

- Create a box with three height segments.
- With Edit Poly create two edge loops in the middle section and one edge loop at the top and bottom sections.
- Move the vertexes to create an arrow shaped tip, as in the image.
- Chamfer the edges.
- Apply a TurboSmooth modifier to make it rounder.


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Model the Trouser Straps

- Create a line representing the path of one trouser straps.
- Apply a Sweep modifier with a bar Section and a small chamfer.
- Make sure Gen Mapping Coords is ON.
- Apply a Smooth modifier with a Threshold of about 50 to generate the smoothing groups on the strap.
- Copy and position the straps around the waist. In **Fig.19** you can see how I have placed mine.

Belt UVs

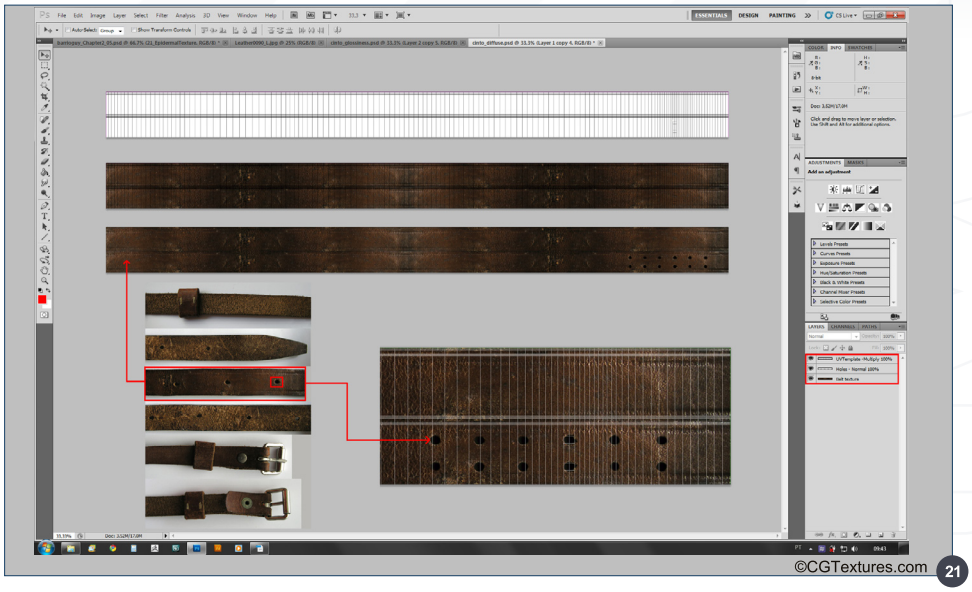
As you might have noticed, I didn't create any holes on the belt. We will do that in the texture. However, without any references it would be quite difficult to know where to place the holes with precision, as the buckle pins must go through the holes (**Fig.20**).

Let's do the following:

- Select the belt.
- Apply an Edit Poly and create some edges where the holes should be.
- Apply an Unwrap UVW modifier.
- Press Edit and in the Edit UVWs window click on the Options button on the lower right corner.
- Turn on Use Custom Bitmap Size and set the width to 150 and the height to 2048. This way the UVs are now proportional on screen.
- Click on the Tools menu and choose Render UVW Template.

- In the Render UVs window set the Width to 300 and the Height to 4096.
- Press the Render UV Template button.
- Save it as "beltUVtemplate.jpg"

Now we have a guide to create the texture in Photoshop with the exact location of the holes.



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Belt Texture

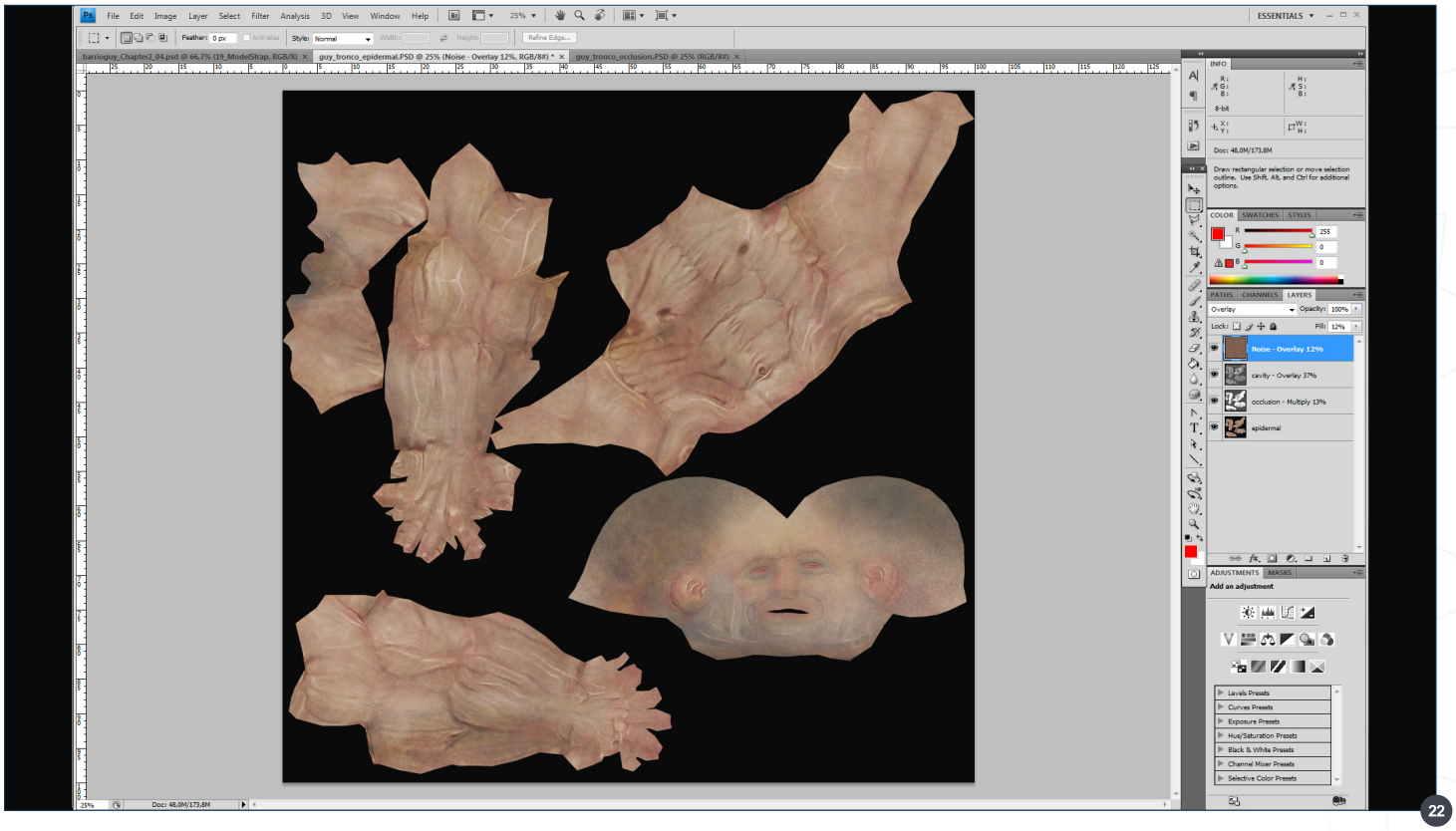
For the belt texture, I have found a nice photo at CGTextures with several leather straps (**Fig.21**).

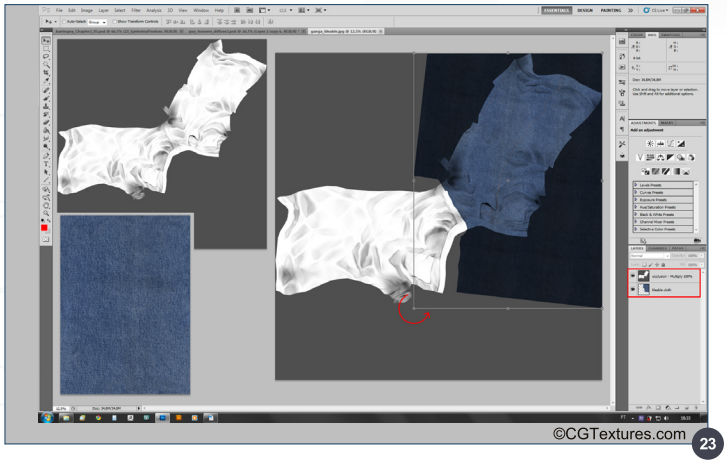
- Open Photoshop.
- Load the "beltUVtemplate.jpg".
- Rotate the image 90 degrees clockwise to make it easier to work with. Invert the colors and desaturate it.
- Double click on the background layer and name it "UVTemplate". Change the layer blending mode to Multiply.
- From the reference image I have selected one of the straps with the Marquee tool (press M) and pasted it underneath the UVTemplate layer.
- Press Ctrl + T and scale the strap to fit the template.
- With the Clone Stamp tool, erase the existing holes on the strap.
- Copy the strap several times to fill the entire length of the belt and erase with a soft brush between the pasted samples to blend them together.
- For the holes, go to the original photo, select one hole and paste it on top of the belt texture. With the eraser, blend the hole with the texture underneath. Make sure to place the holes at the edge markings we so that the pins go through the holes.
- Hide the UVTemplate layer. Rotate the image 90 degrees counterclockwise to go back to the original position and save the texture as "belt_diffuse.PSD".

Epidermal Texture

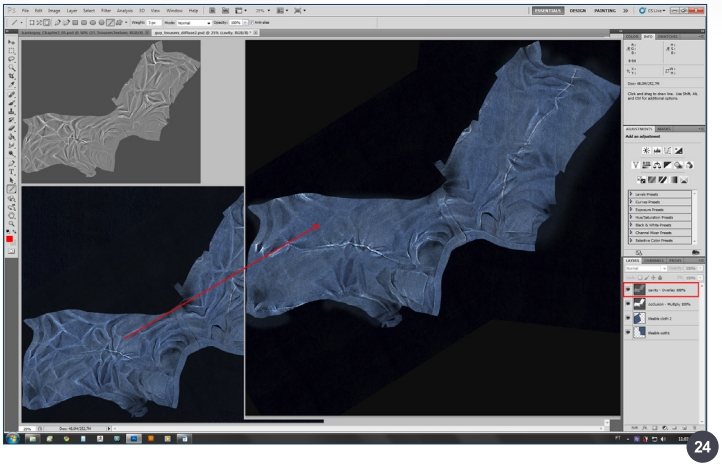
In Photoshop we will add some more detail to the epidermal texture (**Fig.22**).

- Open "body_epidermal.PSD" in Photoshop.


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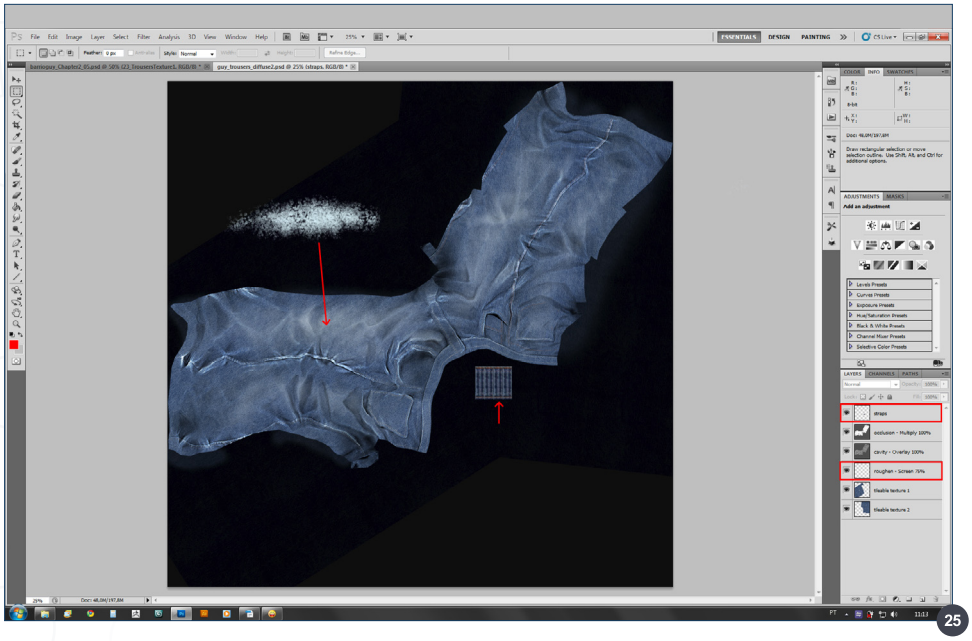
- Create a new layer on top of this one by pasting the "body_occlusion.PSD" image and setting the blending mode to Multiply. Adjust the Fill value to 13% to make the darkening effect subtle.
- Create another layer by pasting the "body_cavity.PSD". Set this layer to Overlay with a Fill value of 37%. The cavity map enhances the edges of the model which is perfect for the chiseled look I am after. If you wish to accentuate parts of the cavity map, just use an eraser with a soft brush to tone down some areas.
- To create some illusion of detail, create a new layer and fill it with a brown color.
- Choose Filter > Noise > Add Noise.
- Change the Noise amount to 45%, set the distribution to Gaussian and turn Monochromatic on.
- Set the layer to Overlay with a Fill value of 12%, this will add some subtle noise to the skin.
- Save it as "body_epidermal.PSD".

Trousers Texture 1

For the texture of the trousers I have also found a nice sample of jeans at CGTextures. It is a clean sample without any stitches, so the only thing I had to do was to make it tileable (**Fig.23**).

To create a tileable texture, use the Offset filter (Filter > Other > Offset) to place the border pixels at the center of the image and then use the Clone Stamp tool to blend the edges.

- Open the "trousers_occlusion.PSD" image you have created.
- Double click it and name it "Occlusion". Set the layer blending mode to Multiply.
- Copy the tileable tissue sample and paste it underneath the occlusion layer.
- Press Ctrl + T to rotate and scale the tissue in order to align it with one of the legs. Make sure that the weave and size of the cloth make sense regarding the direction of the leg.
- Erase the tissue texture at the fly area so that it doesn't overlap with the texture of the other leg.
- Repeat the procedure for the other leg and erase the overlapping texture.


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Trousers Texture 2

- Open the "trousers_cavity.PSD" image, copy it and paste it on top of all the existing layers (**Fig.24**).
- Change the blending mode to Overlay.
- You will notice that the stitches detail is fine, as well as the pockets. However the wrinkles are too strong. So, with a soft eraser brush, erase/tone down the stronger wrinkles.

To increase realism let's roughen the tissue at the front and back of the legs (**Fig.25**).

- Create a new layer below the "Occlusion" layer.
- Set the new layer to Screen mode.
- Pick a noisy brush and a very light blue color.
- Paint the front and back of the legs to lighten the tissue color.

I have searched online for images of jeans and pasted a couple of straps within the image. Later we will maps these to the trouser's straps.

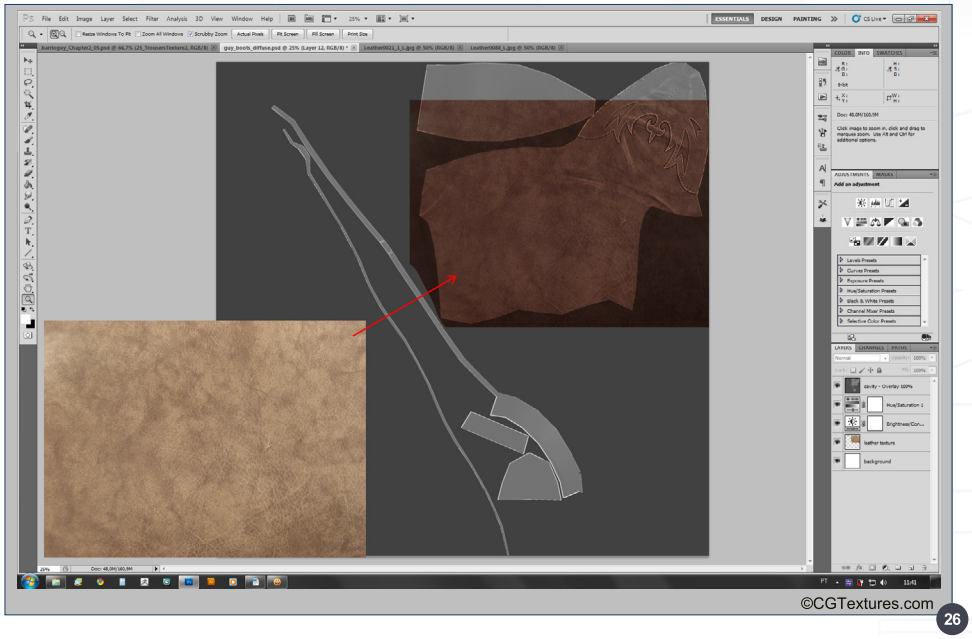
- Save as "trousers_diffuse.PSD".

Boots texture 1

To create the boots texture I have first downloaded a leather sample from CGTextures.

- Open the "boots_cavity.PSD" image in Photoshop.
- Double click it and name it "Cavity". Set its blending mode to Overlay (**Fig.26**).
- Copy the leather sample and paste it below the cavity layer.
- Move the sample to cover the upper part of the boot.

I have adjusted the color of the leather to a darker and more saturated tone by using Brightness/Contrast and Hue/Saturation adjustment layers.



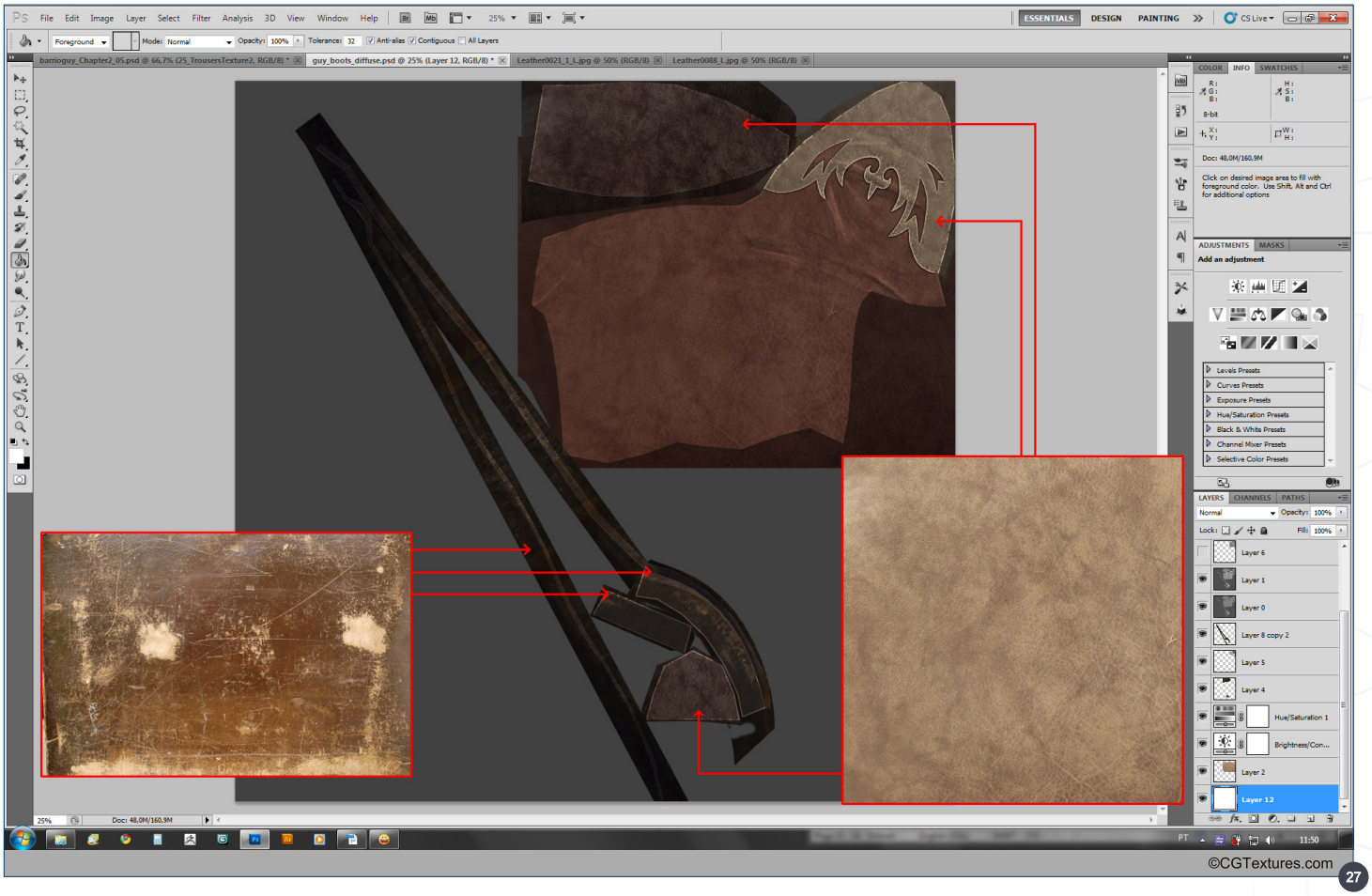
26

For the tip of the boot, I have used the same leather sample with a slight color adjustment to desaturate it (**Fig.27**). The decorations of the tip were erased to reveal the texture below.

For the sole, I used the same texture again but with a color adjustment to make it darker.

For the sides of the sole, I have once again found a nice texture at CGTextures. It is a brown cardboard full of scratches which has a leathery look.

- Place the image below the cavity layer and transform it to match the elements.



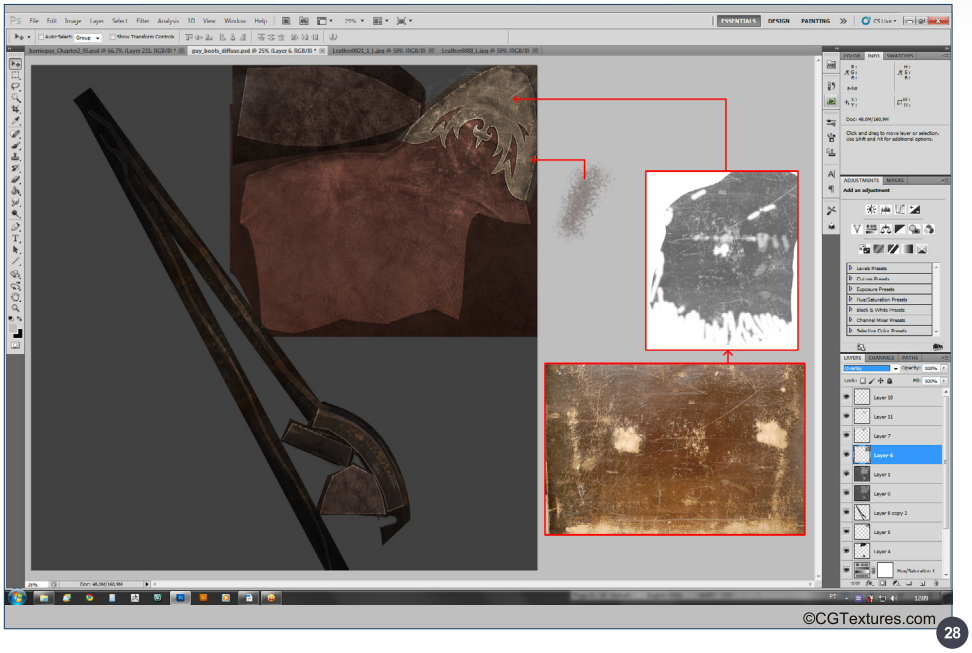
27

- Delete the remaining texture, in order for it not to cover the other boot elements.

Boots texture 2

To add some scratches and worn marks to the boots, we will use the cardboard texture (**Fig.28**).

- Select parts of the cardboard with nice scratches.
- Copy and paste them on the boot texture.
- Desaturate the scratches image and change the blending mode to overlay.
- If necessary use the eraser to blend the scratches with the base texture.
- Create a new layer with Multiply blending mode.
- Select a noisy brush and pick a mid brown color.
- Paint around the boot in the areas where the sole meets the leather.
- Save as "boots_diffuse.PSD".

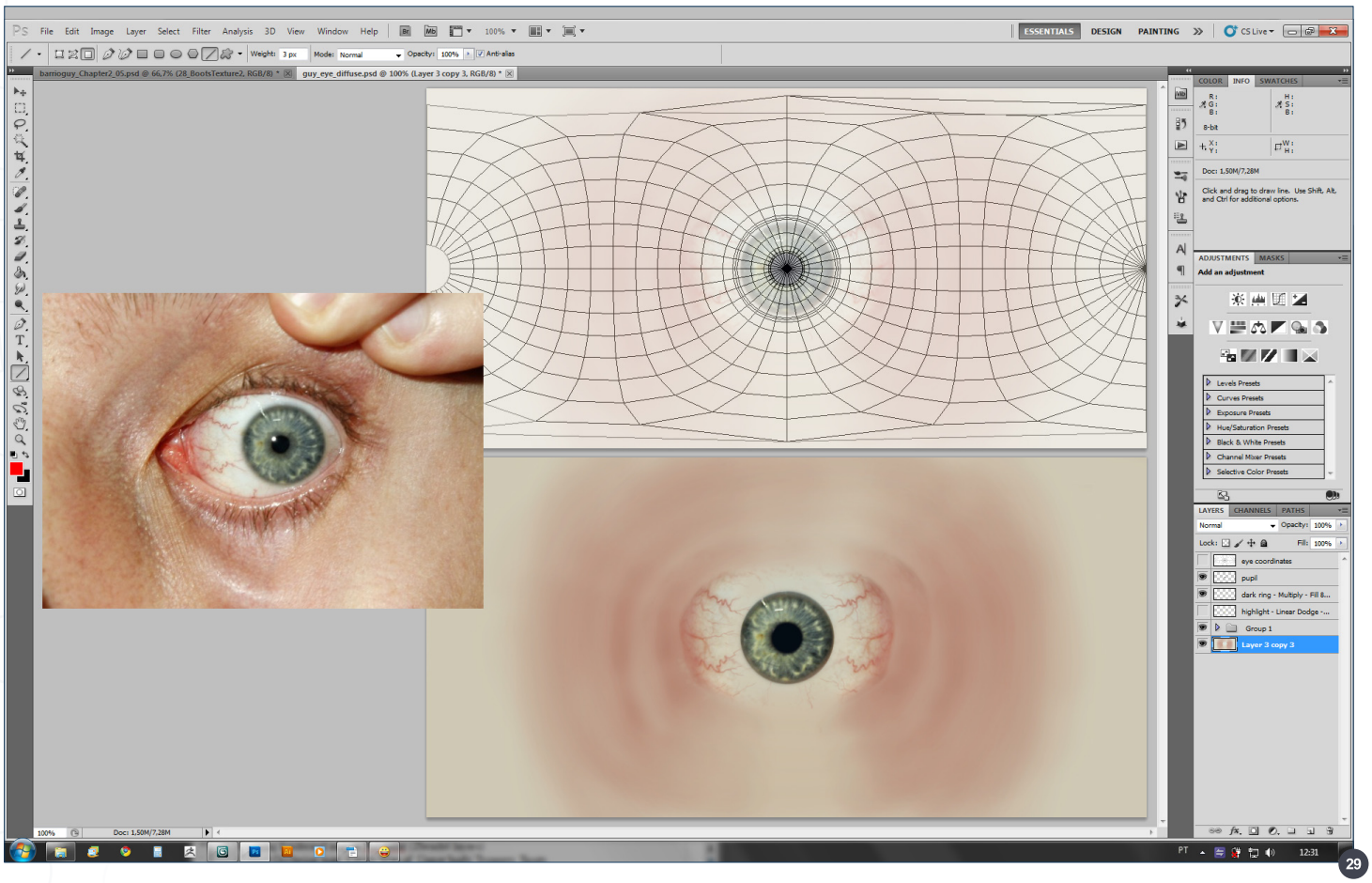


28

Eye texture

The procedure to create the eye texture is the same as in the kangaroo tutorial.

- Render the UV coordinates at 1024x512 inside the UVW Unwrap modifier, as we did for the belt.
- Go to **http://freetextures.3dtotal.com/** and in the Human/Face section download the image "Face-6025.jpg".
- Open the image with the UV coordinates of the eye, invert and desaturate it and set the layer to multiply (**Fig.29**).
- Paste the reference photo in a layer below


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the UVs and match the perimeter of the iris with the UV coordinates.

- Select the left side of the white of the eye in the photo and mirror it to the right side.
- Paint the remaining area leaving the center whiter and the surrounding area in pink tones.
- Hide the UV coordinates and save as “eye_diffuse. PSD”.

Conclusion

We have created all of the character’s color textures. In the following and final chapter we will create the materials and light the scene. Some more textures will be created for glossiness and specularity as those have to be fine tuned with the light. I hope you have enjoyed the tutorial so far. See you in the next chapter (**Fig.30**).



Jose Alves da Silva

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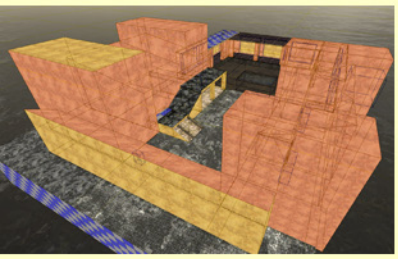
“Barrio Guy” by José Alves da Silva


ONE
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UNREAL GAMES ENGINE TUTORIAL SERIES











Chapter 1 - Project Planning & Software Explanation

Chapter 1 | This Issue
Project Planning & Software Explanation

Chapter 2 | December Issue 064
BSP Creation - Draft lighting

Chapter 3 | January Issue 065
Static Meshes and Texturing Part 1

Chapter 4 | February Issue 066
Static Meshes and Texturing Part 2

Chapter 5 | March Issue 067
Layout - A

Chapter 6 | April Issue 068
Layout - B

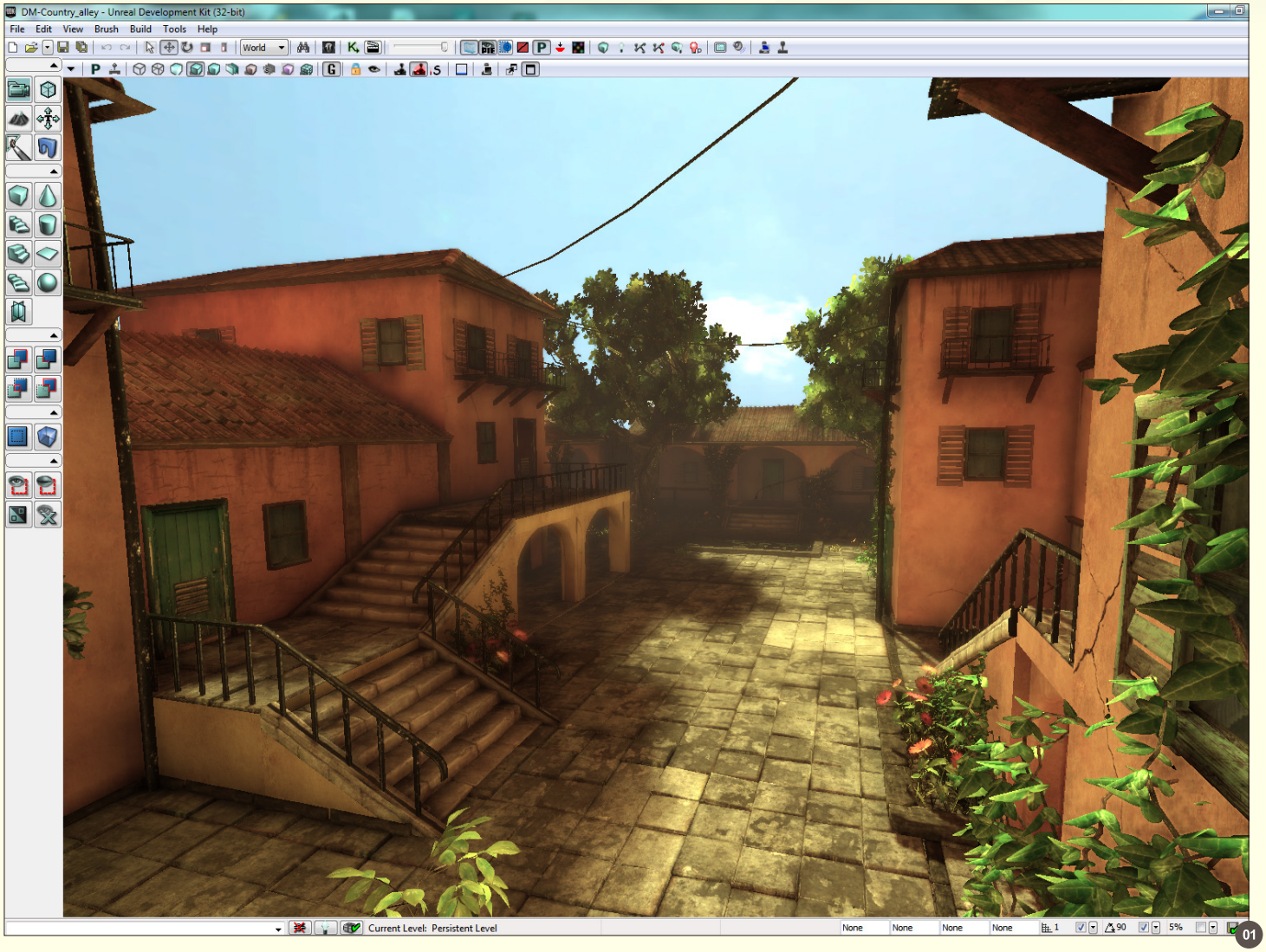
Chapter 7 | May Issue 069
Lighting and Post Effects - A

Chapter 8 | June Issue 070
Lighting and Post Effects - B

The video game industry continues to thrive and grow at an alarming rate, and is swiftly becoming the most obvious option for employment for anyone in the CG industry. This brand new series of tutorials provides an opportunity for anyone trying to get into the business to learn how to create a basic game level portfolio piece that would impress any potential employer. Using the Unreal Development Kit, UK-based artist Andrew Finch talks us through the entire creation process, from downloading the free software and choosing its settings, to importing and texturing accessories. This really is a must have for anyone interested in gaming or game design.

DOWNLOAD RESOURCES

- Free Artist Final Game Level



01

UNREAL GAMES ENGINE TUTORIAL - CHAPTER 1: PROJECT PLANNING & SOFTWARE EXPLANATION

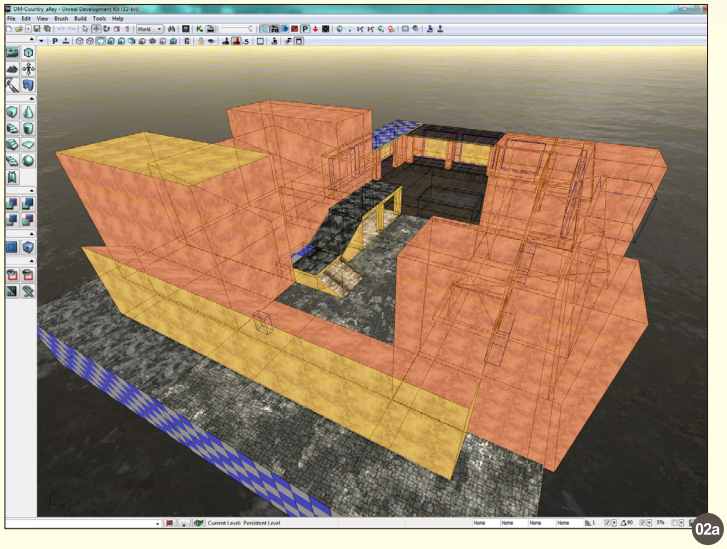
Software used: UDK (Unreal Development Kit)

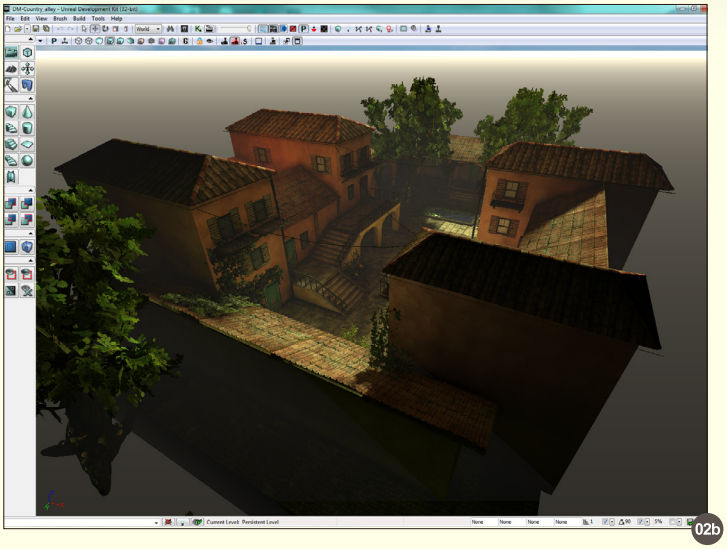
Hello. I thought I would start with giving you a little information about myself. My name is Andrew Finch and I'm an environment artist in the games industry who is currently working on my fifth title. I've always wanted to create tutorials that would help others to get into the games industry, so I have come up with this tutorial which concentrates on creating a portfolio piece from start to finish. A very common problem I encounter is people not completing a project because they get bored or have bitten off more than they can chew and can't find their way to the finish line. With this in mind, I have structured this tutorial in easy-to-follow chunks which are not too overwhelming.

A lot of tutorials out there concentrate on creating individual assets. This is okay because it teaches you how to produce a nice detailed asset, but I think if you are going to present it to a potential employer you need to show off your asset by putting it in a little scene. This allows you to show off multiple skills, not just modeling and texturing. The level I will create is reasonably small and basic and is hopefully easy to follow, but what it will do is prepare you to start and finish your own projects and produce a really nice portfolio piece.

At the end of this tutorial you will be able to export textures from Photoshop and 3D assets (static meshes) from 3ds Max and then import them into the UDK game engine. You will also be able to set up a level in a way that will allow you to create a standalone program of your level and be able to distribute it in your portfolio to future employers or even just to your friends. I will also cover lighting and post effects to really add polish to your environment and make it stand out and look professional. This tutorial is not an in-depth guide to UDK or 3ds Max and Photoshop, I will show you how I created this environment but basic knowledge of the applications is required.

To get your hands on UDK you can download it from here: http://www.udk.com/download. Once downloaded, you will get the game engine and a small library of assets available for you to use in your environment. The advantage of this library is that you can quickly populate your


02a

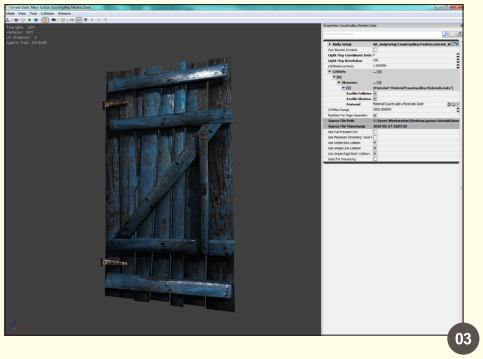

02b

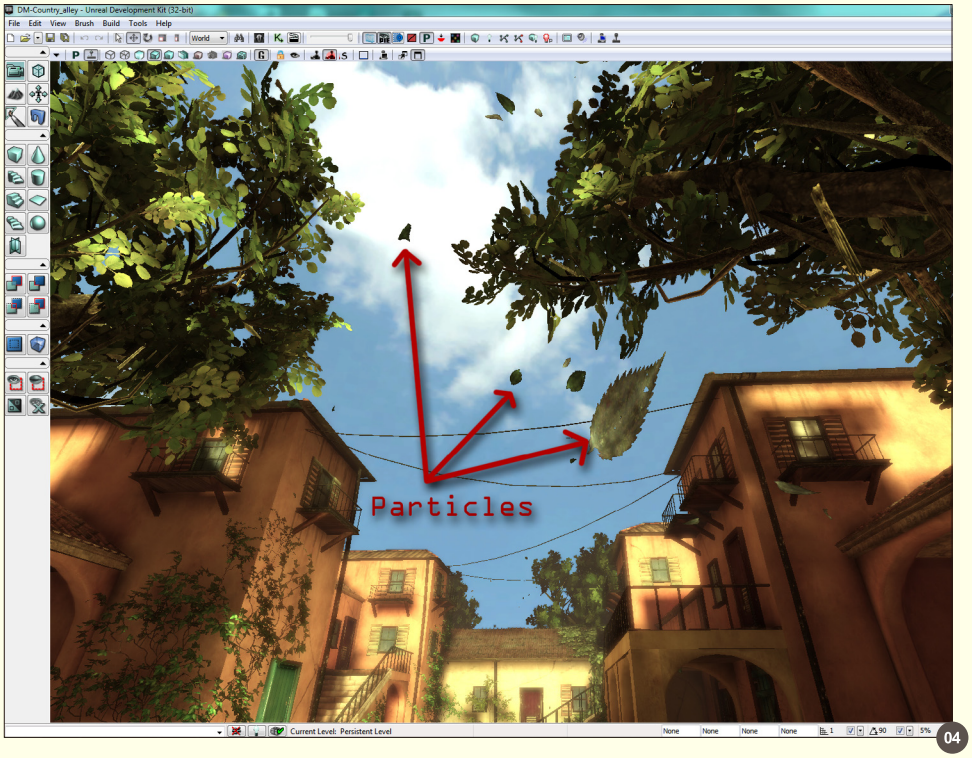
scene and add lots of detail. This will help you to figure out how many assets you really need to create a convincing scene. The disadvantage of using these assets is that it can make you lazy and discourage you from producing your own assets. When it comes to interview time you will be asked exactly what you have made in the environment and it won't look good if you're using other people's work to make yours look better.

For this tutorial I will create some assets and textures but because of the time restrictions, I will also use some assets from the library to bulk up the scene. I encourage you to create 100% of your own assets to further impress possible employers.

So let's start by taking a look at the finished scene (**Fig.01**). The scene is made from **BSP geometry**, Static meshes, particles, lighting and post effects. So what exactly are these?

BSP Geometry - This is basic geometry that is created in the UDK engine and can be textured in the same way you would texture geometry in a 3D package. This is the base that we will build on layer upon layer to get a detailed environment. This step is important because it shows us how big the level will be and it will allow us to move about in the world and get a feel for the space and make sure it looks right. The BSP geometry is easy to edit so if something is not right we can fix it quickly. If we were to create the whole level from complex static meshes it would take a lot longer to make edits. These images show the BSP geometry and then the BSP geometry with static meshes added (**Fig.02a – 02b**).

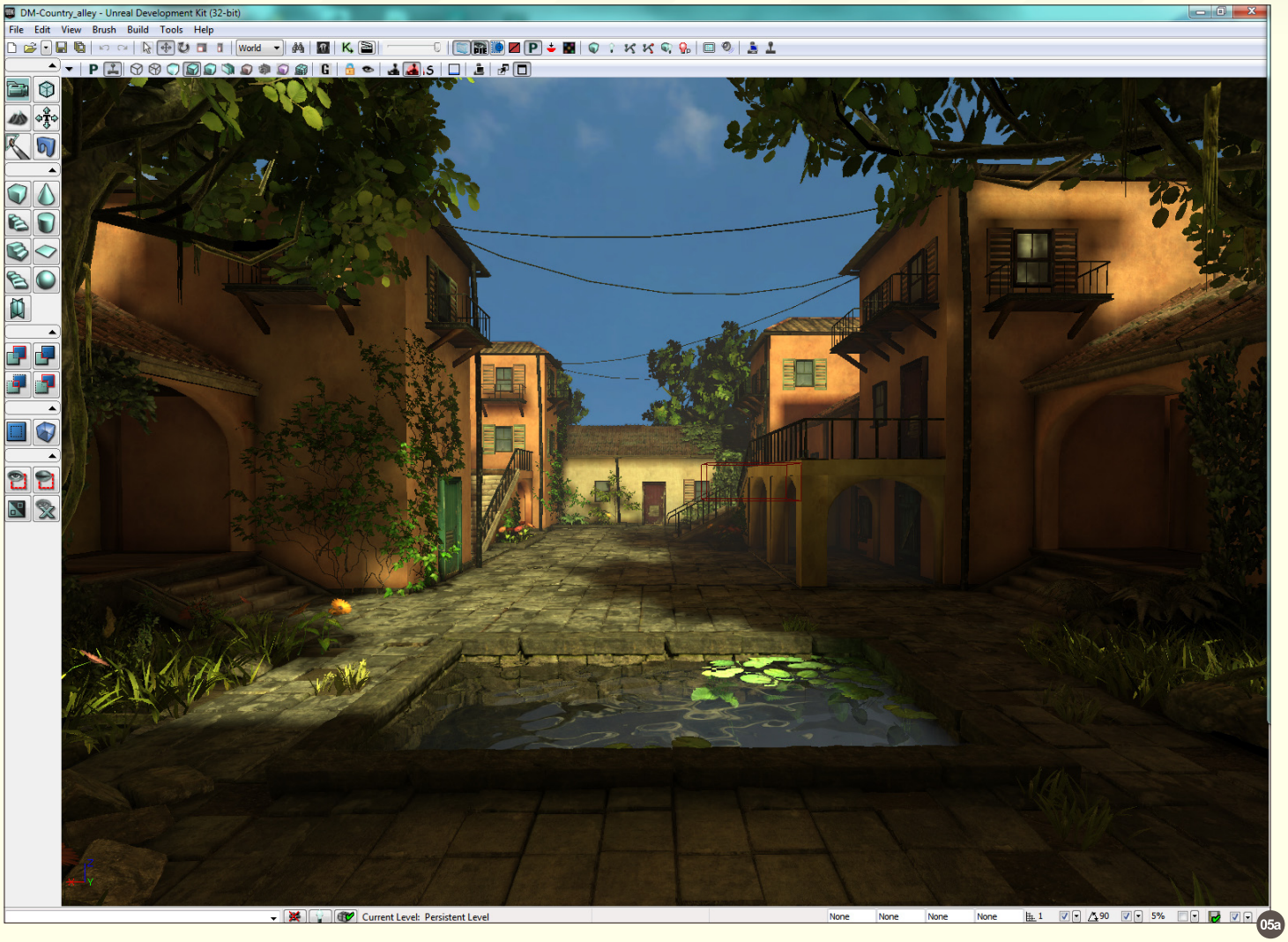

03



04

Static Meshes - These are assets such as building sections, objects, vegetation and sky domes, that are created in your 3D package and exported in a format that is recognized by UDK. In 3ds Max you would export meshes as ASCII Scene Export (*.ASE) format. The process is very simple and quick; it makes it very easy to get your meshes into UDK (**Fig.03**).

Particles - These are a great way to bring your environment to life. In this tutorial I have used a leaves particle effect to give the illusion of

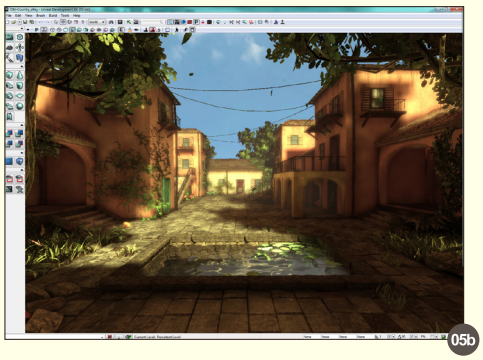


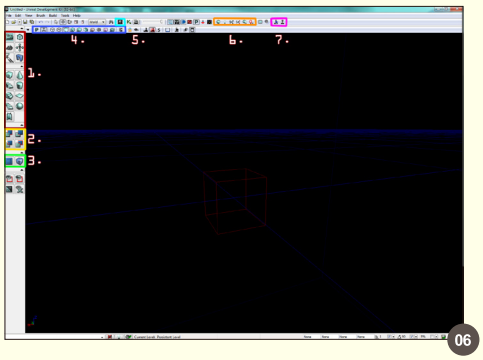
05a

leaves falling from the trees (**Fig.04**). It adds another dimension to your level and also adds movement to an otherwise static scene. You can also add particle effects to show water or splashing effects or even birds flying in the sky. The possibilities are endless!

Lighting and Post Effects – The lighting in this scene is very simple but will give us some very interesting areas in the level. The scene is lit by strong sunlight that will produce nice shadows and dark areas, but on the other hand will give us very strongly lit areas and bounce lit areas. We will use the new lightmass technique to create the sunlight and bounce light.

Post effects are things such as motion blur, color correction and depth of field. I will show you how I used these techniques to create a polished looking final result. **Fig.05a - 5b** show the scene with and without post effects. As you can see, post effects add a lot to the final scene.


05b


06

Getting Started

Open up UDK and let's make a start. In **Fig.06** I have highlighted the main areas we will be working in. I'll give you a brief breakdown of what they are, but I will go into more detail as this tutorial progresses. If you want to know what each icon does then hover your mouse over the icon and it will pop up a quick description.

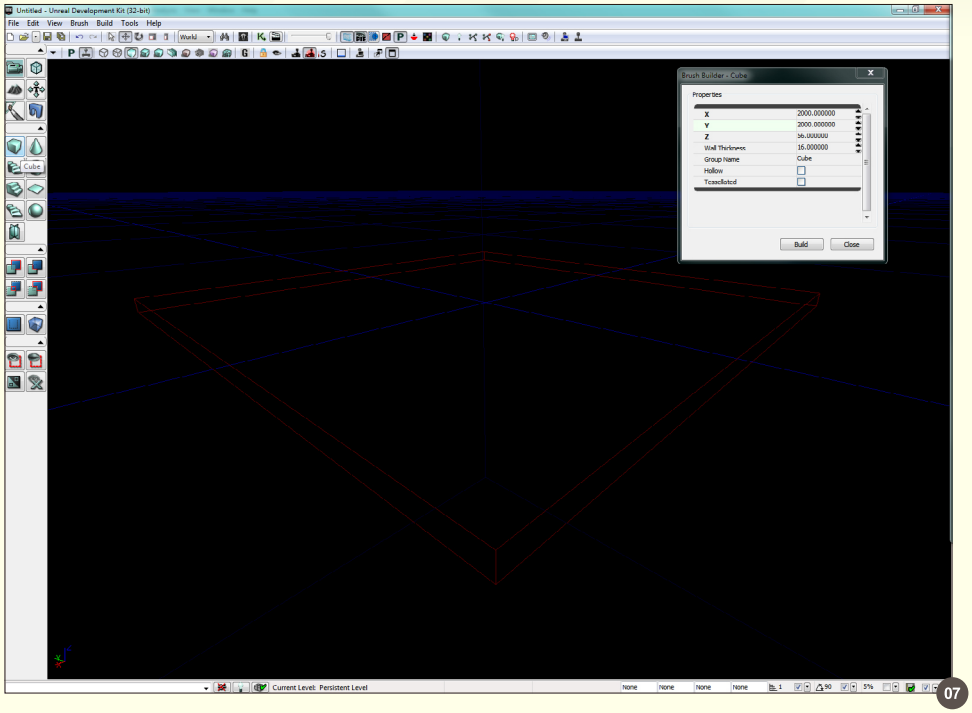
1. These are your building tools. You will use these tools to create your BSP geometry and edit their shape.
2. These tools allow us to add or carve out geometry that we have placed using the BSP brushes above.
3. These tools allow us to add special volumes to our environment, such as water and collision. They allow us to isolate areas

in the map and give them special properties that don't affect the whole map.

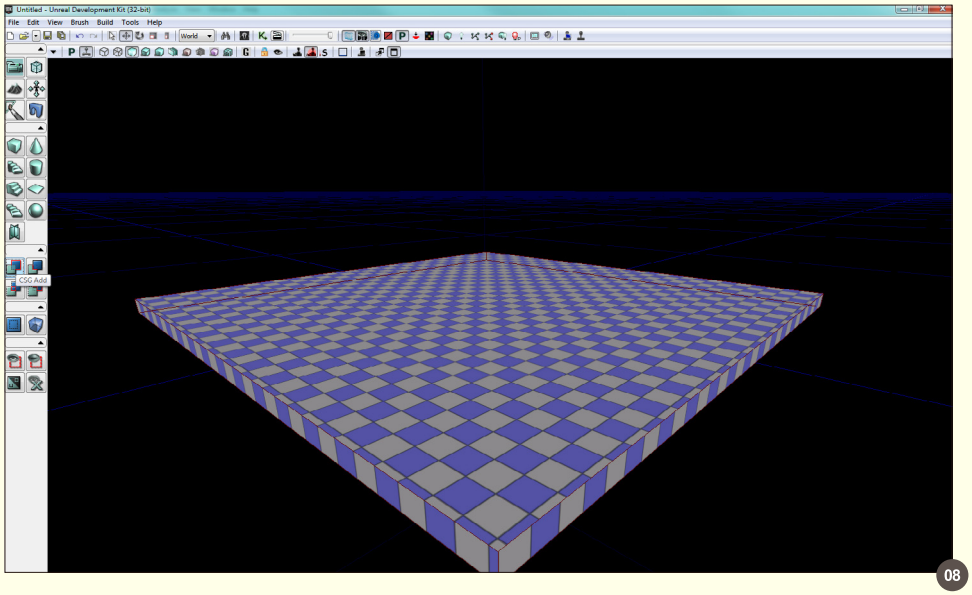
4. These are our viewport controls, similar to what you get in 3D software. They allow us to view the viewport in different modes.
5. Highlighted in a cyan box, this is the Content browser. We will be using this tool a lot. This is where we import all our assets for the environment and browse the library of assets that come with UDK.
6. This is where we build our level. When you make edits to the world you have to rebuild the geometry and lighting in order to get the changes to display correctly. We will be using this area a lot during the tutorial.
7. Finally these tools get us in the game and playing our level so far. Very important for viewing how our level looks.

To control the camera in the viewport:

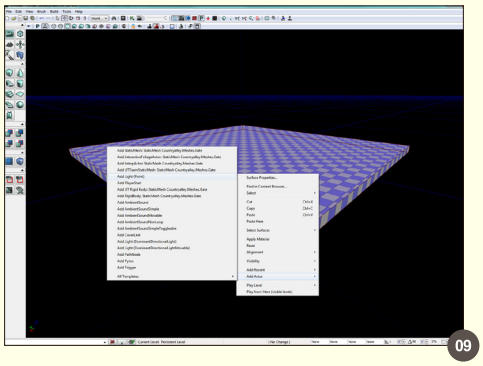
- Click + drag left mouse button moves the camera forwards and backward.
- Click + drag right mouse button rotates the camera on its pivot point.
- Click and drag the Left + right mouse buttons moves the camera up and down.
- Click and hold right mouse button and use keys W, S, D, A allows you to move about the viewport in a more natural game control system.



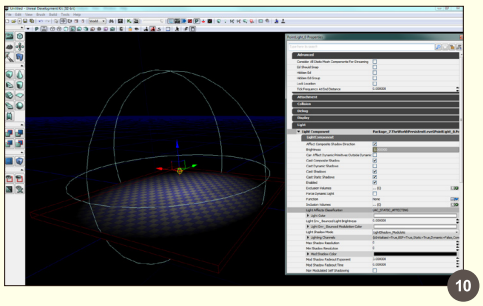
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Let's create a playable little area to get us more familiar with these tools. Click File > New Map and select Additive for the Geometry style. This allows us to add geometry to the map. Right click over the Cube brush and the settings for the brush appear. Use the same settings I have used in the screenshot (**Fig.07**) and you will see the red builder brush change shape to match the settings you typed in. Then click on the CSG ADD icon, as shown in **Fig.08**. If nothing happens you need to make sure you are in Unlit Mode for the viewport, located in area 4 of **Fig.06**. Because there are no lights in the scene at the moment, the geometry may not be visible.

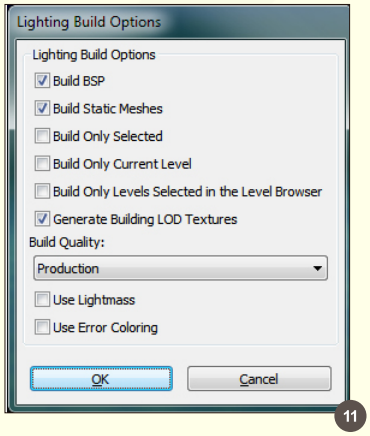
So let's add a light to the environment.

Left click on the top surface of the new geometry and it should turn a blue color. Then right click to show a menu. In this menu scroll over Add Actor and a further drop down menu will now appear. Select Add Light (point) (**Fig.09**). This will drop an Omni light into the scene. Now in the viewport options select Lit Mode to display lighting in the viewport.

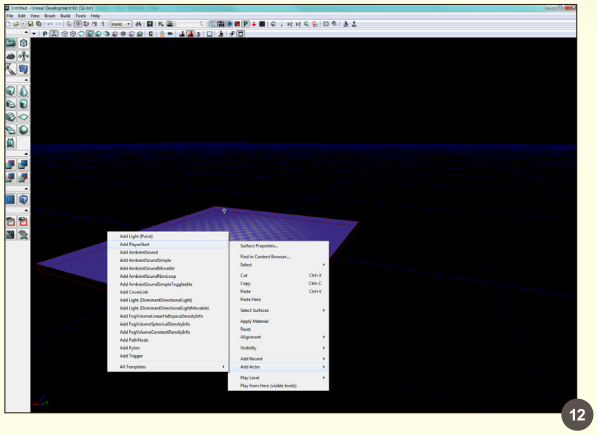
With the new light selected press F4 to display the settings. Here you can adjust things such as brightness, color and radius (**Fig.10**). I will go

into further details later in this series but for now keep the settings as they are. Move the light up in the Z axis to get it off the ground and allow the light to spread across the floor.

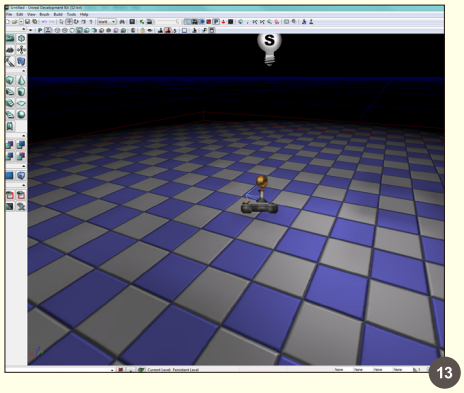
We now need to build the lighting so click the light bulb icon located in area 6 of the tools described earlier. This will pop up a new window of options. Leave all the settings as they are except for Use Lightmass. Uncheck this option for now. Lightmass is a new tool that calculates bounce lighting and something I will go into further later on in the tutorial (**Fig.11**). Click OK and UDK will calculate the lights in the scene and then display the correct lighting.

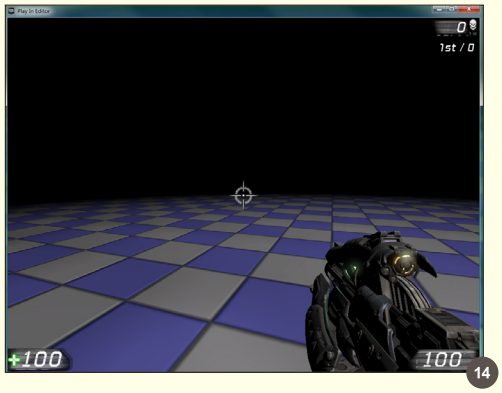


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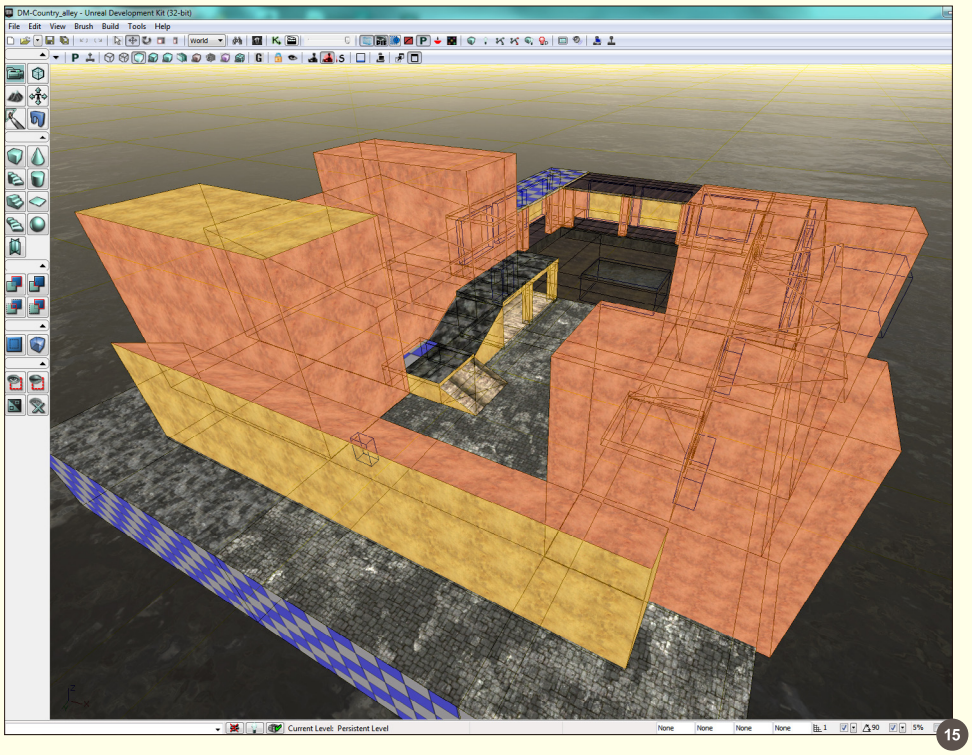
In order to be able to move around the level we need a starting point for the player. We can do this by using the same process we used to add a light start point. Left click on the top surface of the new geometry and it should turn a blue color. Then right click to show a menu. In this menu scroll over Add Actor a further drop down menu will now appear and select PlayerStart (**Fig.12**). This will drop an icon of a joystick in the scene (**Fig.13**). This is where the player will always start in the level. Be careful not to move the icon in an up or down direction as it will affect the player. Too high and the player will drop onto the floor; too low and you will get error messages that the player is starting in the floor geometry.


13



14

Now here comes the fun! Time to play what you have created. Click the joystick icon located in area 7 of **Fig.06**. This will pop up a game window and you will be able to walk around and shoot your gun, exciting yeah (**Fig.14**)! When you are done walking around, just press ESC to quit out of the game window.


15

Conclusion

You should now have a basic level setup and be ready to start working up into a detailed environment. In the next chapter I will complete the BSP geometry of this environment and apply temporary textures and draft lighting (**Fig.15**). I will also cover how to test your environment and make any changes that are needed.

I hope this tutorial has not overloaded you with information. It is a lot to take in but after the next chapter you should be comfortable with creating a basic level ready for dressing with assets. Keep practicing until the next chapter and familiarize yourself with UDK. It really is a powerful piece of software. Thanks for reading!

Andrew Finch

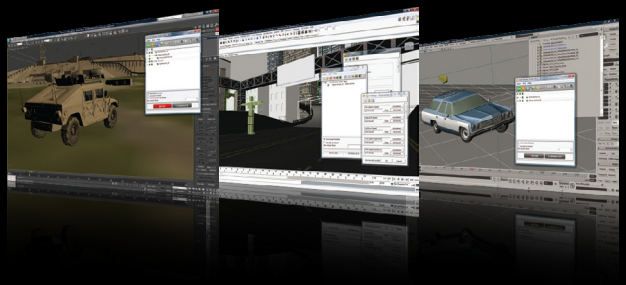
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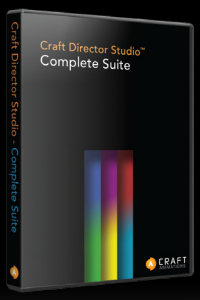


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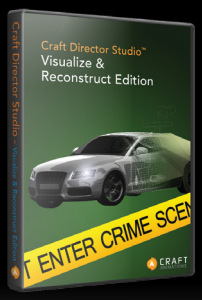
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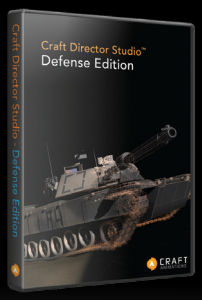
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ZBrush Monster

Character Creation

Chapter 2

Swamp Monster

ZBrush is becoming more and more powerful in the world of 3D, with many artists now embracing its flexibility and hands-on approach to sculpting characters. ZBrush monsters are slowly starting to dominate the CG forums and galleries across the internet and in this six part series we have invited some ZBrush pros to show us how it's done! Each artist has been given a specific environmental condition as a starting point and has sculpted a monster based on that idea, accompanied by a step-by-step tutorial detailing the creation process from concept through to completion.

Chapter 1 | September Issue 062
Mountain Monster

Chapter 2 | This Issue
Sewer Dwelling/Swamp

Chapter 3 | December Issue 064
Subterranean

Chapter 4 | January Issue 065
Volcano

Chapter 5 | February Issue 066
Aquatic

Chapter 6 | March Issue 067
Jungle

Chapter 2 - Sewer Dwelling / Swamp Monster

Software used: ZBrush

Gather information and references

In order to create a believable creature you have to do a lot of research. I read every book I had in my library about this kind of animal and in addition I gathered tons of references from the internet and from Wikipedia. This is an important first step, because it is the foundation of your creative process. Without some kind of guidance you just randomly think about cool designs. That can be fine in some situations, but when you are asked to design a creature with very specific features you have to be very analytical.

The habitat in which my creature lives isn't really a habitat technically speaking, it's mostly an environment with some typical features. For example it is very humid and the ground is generally flooded by shallow bodies of water.

There are a great variety of animals that could live in this environment: rats, frogs, fish, crocodiles and insects. Because of this variety, deciding what my creature should look like and which features it should have was a tricky adventure.

Creature Design

Since the most obvious feature of the environment I'm dealing with is its humidity, my first concern was the respiratory system.

Generally you could have two kinds of animal in a swamp: one with and one without gills. Gills are present in a lot of different animals and not just in fish; you can have modified gills on mollusks, crustaceans, insect and amphibians. I very much liked the flexibility that the gill design could lead to, so I wanted to explore this idea more.

Gills extract and dissolve oxygen from water that flows into the mouth of the animal. For my creature I wanted something less dependent on water; something that could also live in very humid land environments. Nature, as always, has the answer! There are animals that use their gills on land to extract oxygen from moist air, and there are also fish that use a primitive nasal cavity and lungs. As well as this there are frogs with a very interesting life cycle. They start as a tadpole and have no lungs but have gills and then later on they develop lungs. All of this knowledge gave me a lot to play with. It was just a matter of finding the right answer to our organic puzzle!

My idea was a creature that uses gills and skin to extract oxygen from the humid air, and that has nostrils as a backup for its respiratory system.

So the skin is permeable to oxygen and carbon dioxide as well as water, and it has blood vessels near the surface of the skin that, when underwater, transmit oxygen directly into the bloodstream.

The bone structure was another crucial thing to think about. When thinking about sewer or swamp dwelling creatures the salamander was my first thought, although I also liked the turtles' carapace design, or the spiky skin of the crocodile. Since this step influences the final look of the creature heavily I decided to do some sketches.

I had a clear idea in my mind for its hands and feet. I wanted them to be finned because this way the creature would have the right thrust underwater and also a good grip on the wetlands. For practical reason the creature needed to have the ability to catch prey, so I imagined a hybrid mutation where thumb, index and middle finger were present and the ring and the pinky finger were mutated on a fin.

For the feet I went for real fins, although the internal bone structure is very evident and solid.

Sketching

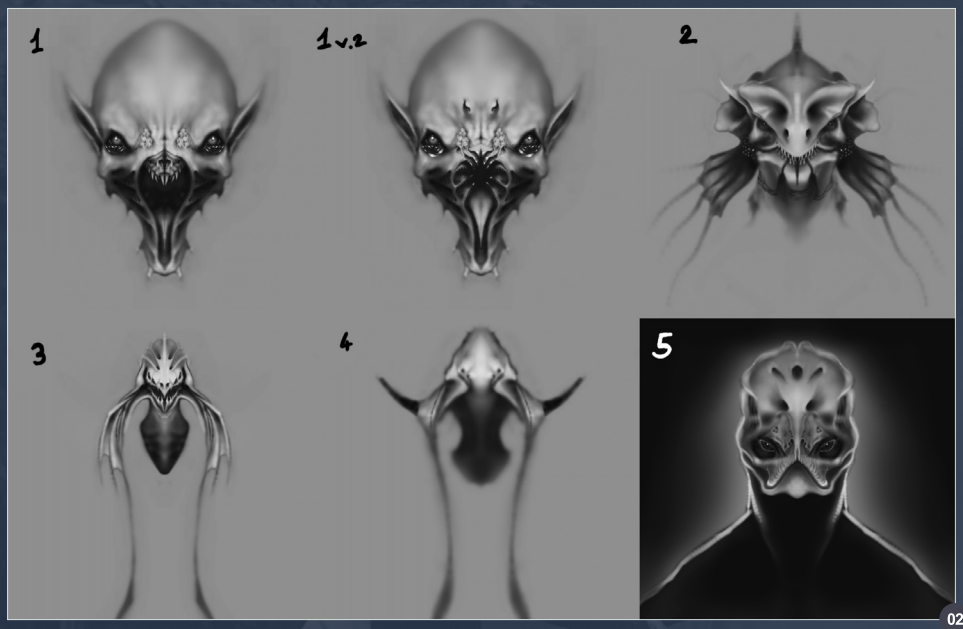
When considering the creature's appearance, at first I thought about crocodiles and turtles, with maybe a primitive carapace and a head like a snapping turtle's. With this in mind I developed a sketch in Photoshop after some doodling with pencil and paper. The design I came out with was very close to what I had in mind



01

(**Fig.01**) but for some reason it appeared too "naturalistic" for a monster. It was not easy to admit that the design, though nice in itself, was not the right design I wanted for this creature... so I decided to explore some different designs.

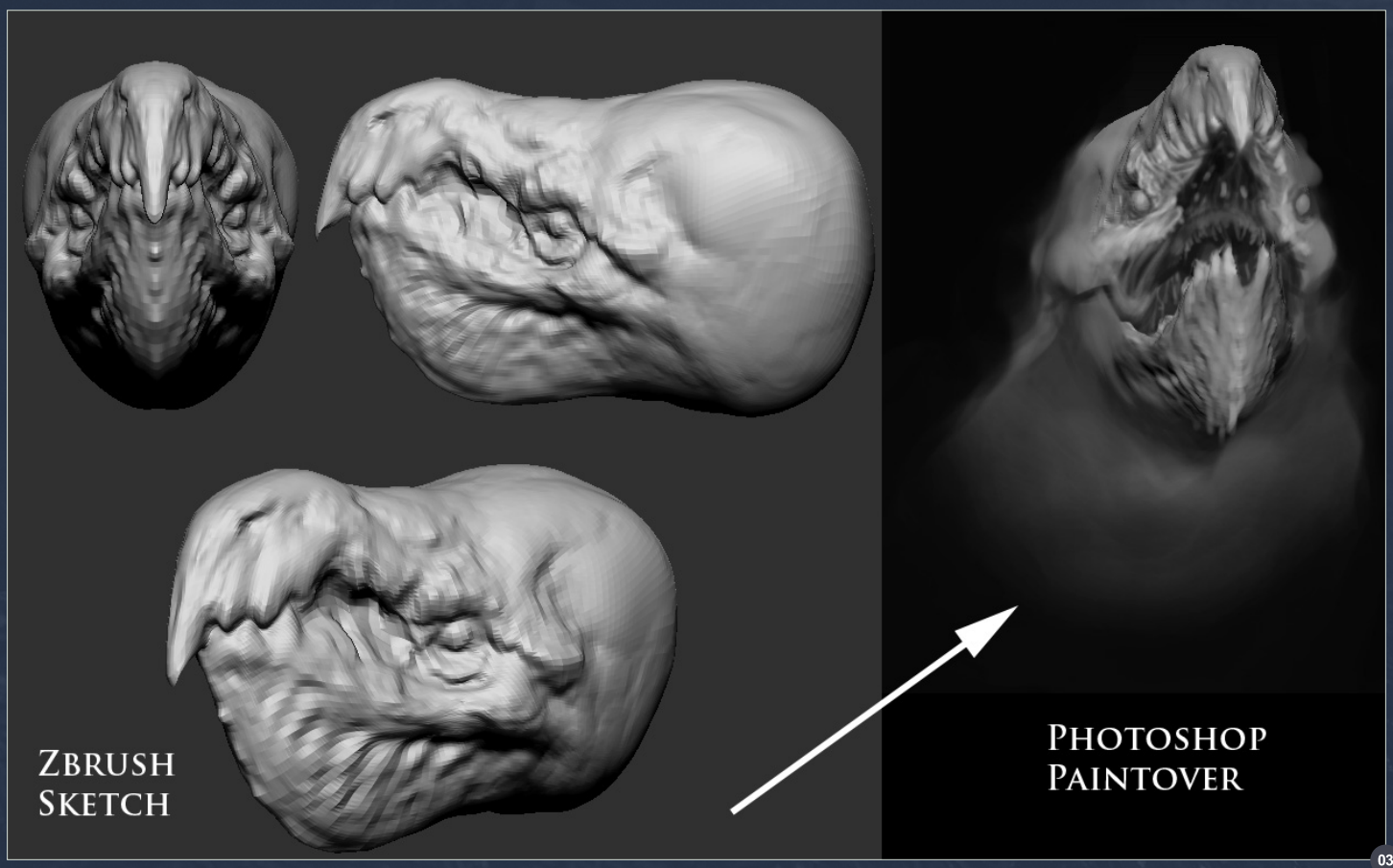
I picked up ZBrush and, with a technique learned from Neville Page, created a 3D plane and converted it into a Polymesh. I filled the plane with a neutral gray and then with just the RGB for my brush turn on and symmetry active, I started to sketch on the plane with Polypaint. At first I tried to not subdivide the plane too much, just two or three times. This way you cannot go crazy with details and you pay a lot more attention to the primary forms, since you are restricted to the mesh resolution. I came up with five different head designs (**Fig.02**) in the end.



02

Sketch 1 and 1v.2 looked very cool. I liked them a lot because they had the "monster" feeling that I was looking for, but to me they were a bit too vampire like. 2 and 3 were ok, nothing shocking, some nice elements I found interesting like the flower-like ears on 2. 4 was nice too, maybe too aquatic but a nice silhouette. I couldn't really fall in love with 5. To me it was because its features were too similar to a human's.

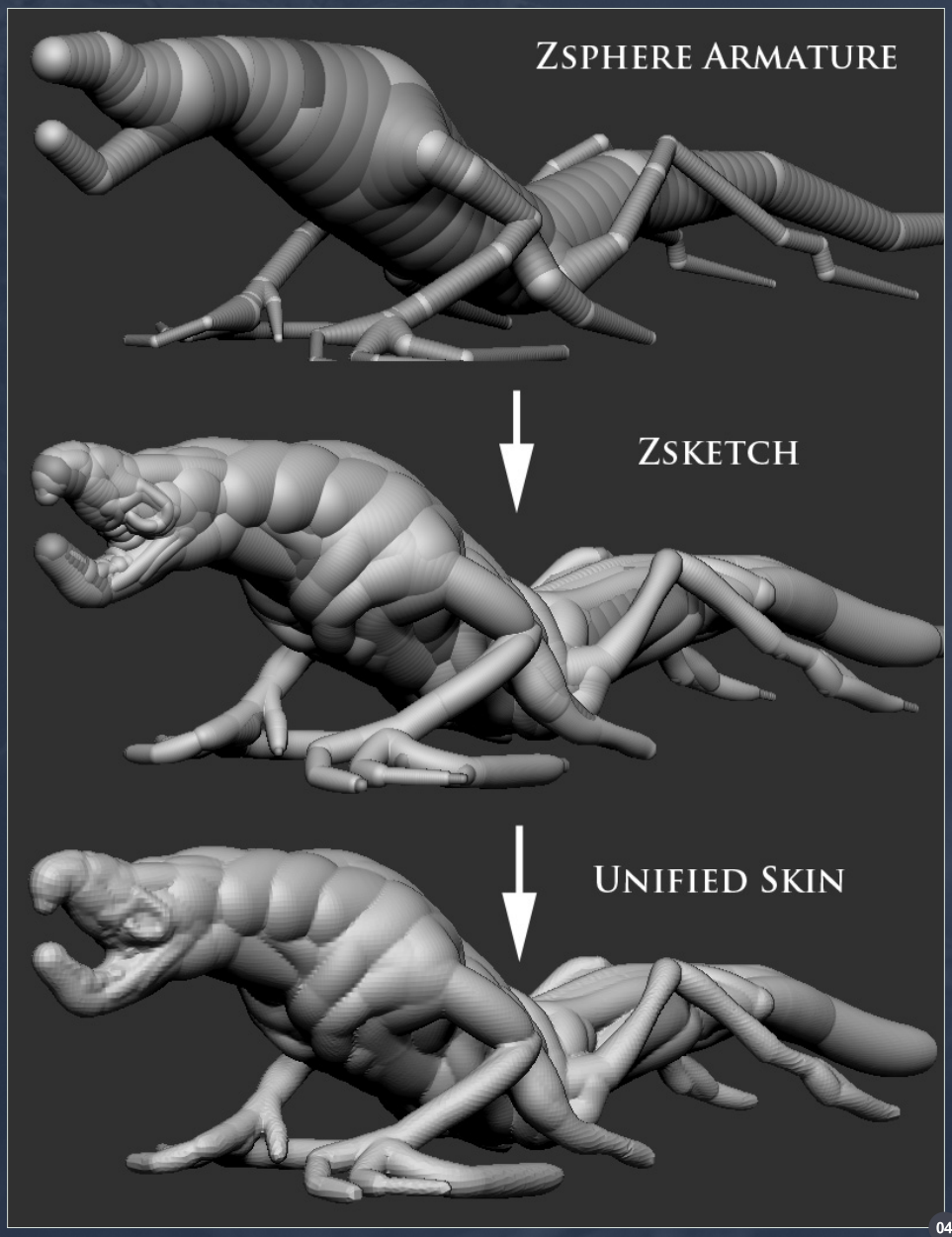
I found that using ZBrush in this way has some really cool potential. Having Symmetry on whilst painting lets you have some feedback quicker than traditional painting, and within two or three hours you can end up with five-six different designs. Another way I use ZBrush in combination with Photoshop for sketching is to start sculpting from a sphere and then take what I have and do a paintover in Photoshop (**Fig.03**).



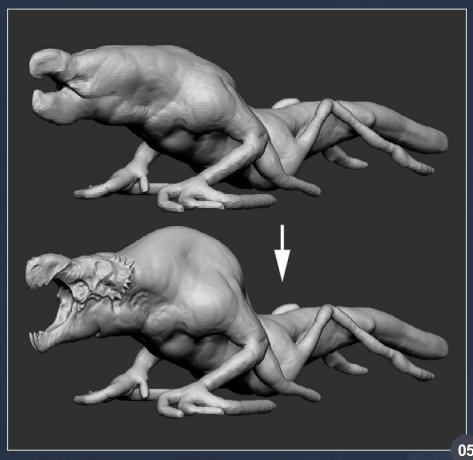
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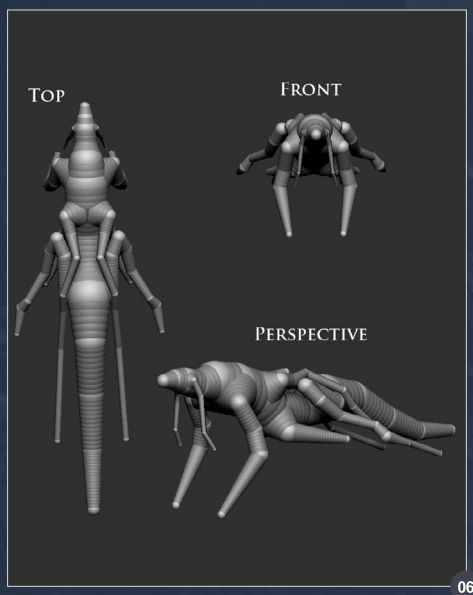
Getting back to my creature, I went on to use ZBrush for a pure 3D sketch. I started using ZSpheres to build an armature for my creature, and then I used zsphere2 to sketch the masses of the body on top of the armature. My suggestion here is to use a thin armature, and use the ZSketch feature to fill the masses with bigger volumes. Try to use few strokes and manipulate them to give the look you have in mind using the Move and Bulge tools.

Once you have the forms roughly in place convert your ZSketch to a Unified Skin. With this newly created mesh you can start to develop the forms as you normally would with the sculpting toolset that ZBrush offers (**Fig.04**). I used a combination of the Move and the new Move Topological brushes to adjust the silhouette and the masses, and then with the Clay and Claytubes brushes I sculpted the mesh (**Fig.05**).



04


05



06

To me sketching is not trying to find the right answer, it's just a visual way to collect ideas, get inspired by forms and explore your thoughts. Generally it's hard for me to look at a sketch and say "Ok, this is what I was looking for!"; more often it's just for inspiration, a guideline, and most of the time I use different elements I like from different designs.

As you can see I went for a very different design with very singular features, inspired by nature, but with a flexible degree of interpretation. With all of this in mind, and with my references and sketches in front of me I started what would be my final design.

Base Mesh and First Sculpting Stage

Since I didn't have a super clear idea about the final look of my model, I started out using ZSpheres. The goal here is to capture the gesture and some of the silhouette of the creature you have in mind, so I generally don't create very specific features at this stage, but I focus on the feeling that I want in the figure (**Fig.06**).

When I was happy with the ZSphere armature I converted it to an adaptive skin, to get my low poly base for the model.

Now I had my base I started to adjust the shapes as usual, using the Move and Transpose brushes. The combined use of these two tools is fundamental to get the best out of your base mesh, because at this stage is too early to even use the Standard brush. A very valuable tool in ZBrush 4 is the Move Topological brush. This lets you move the surface of the sculpt accordingly to its topology, so it automatically masks what it's near to. This is something I used to do manually with the Transpose Masking tool, but this new brush works perfectly, so no more back and forth between Transpose and Edit for masking!

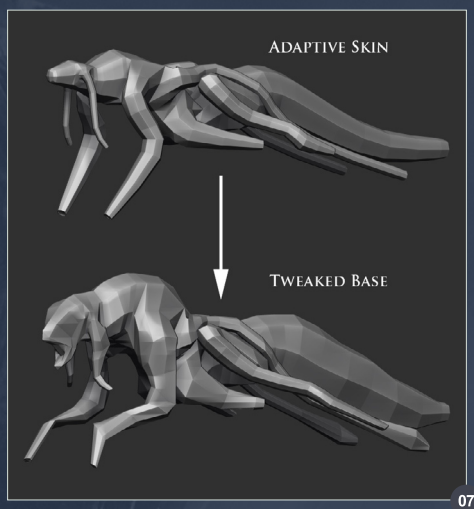
After some tweaking I came up with a pretty decent looking base. The most important thing is that it has a good and defined gesture and silhouette, plus some initial hints of some features (**Fig.07**).

Refining the base and building the foundations of the creature

This stage is one of the two hardest steps in the creation process. You have to slowly try to refine the basic form of the model. Right now the form is temporary and it's time to try and find how you can develop that form. Sometimes I can spend hours just with the Move brush, looking at the model from every angle and doing minor adjustments. I then undo and redo rapidly to see the difference, and decide if I should make the changes.

Once you have touched every polygon you will need more room to play, so it's time to subdivide.

Lately I have been using a technique that consist of blurring the viewport while sculpting. There is a button called VBlur (in ZBrush 3.5 it was under the Draw submenu on the Preferences Menu; now in ZBrush 4 you have it on the BPR menu under View Blur). When it's pressed a VBlur Radius slider appears - I usually set it to 3 or 4. Sculpting with the blurred viewport is very important in my sculpting process, because at this stage the primary focus is the primary forms and with the blur active you can focus on this. I find that it's a good way to force yourself into good habits.

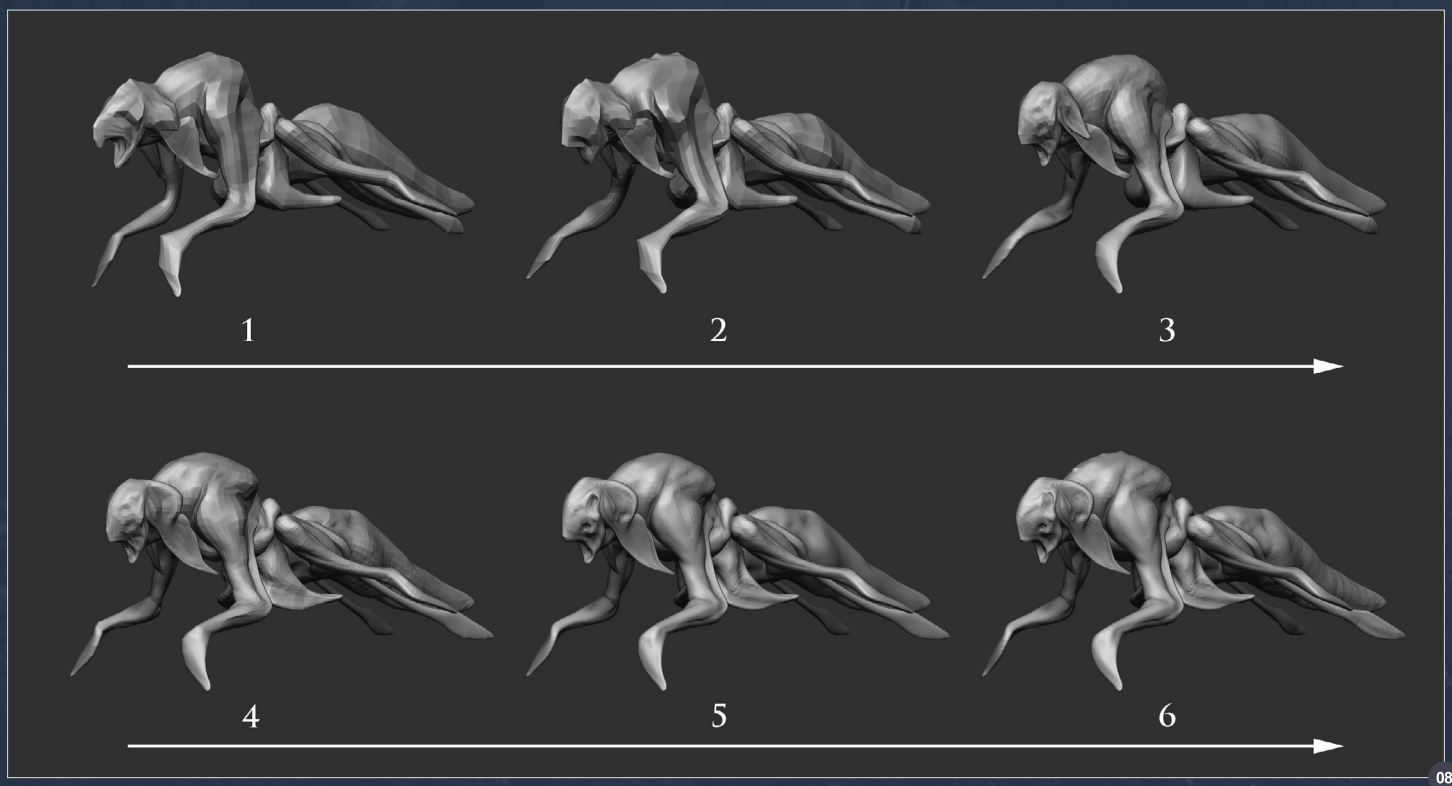


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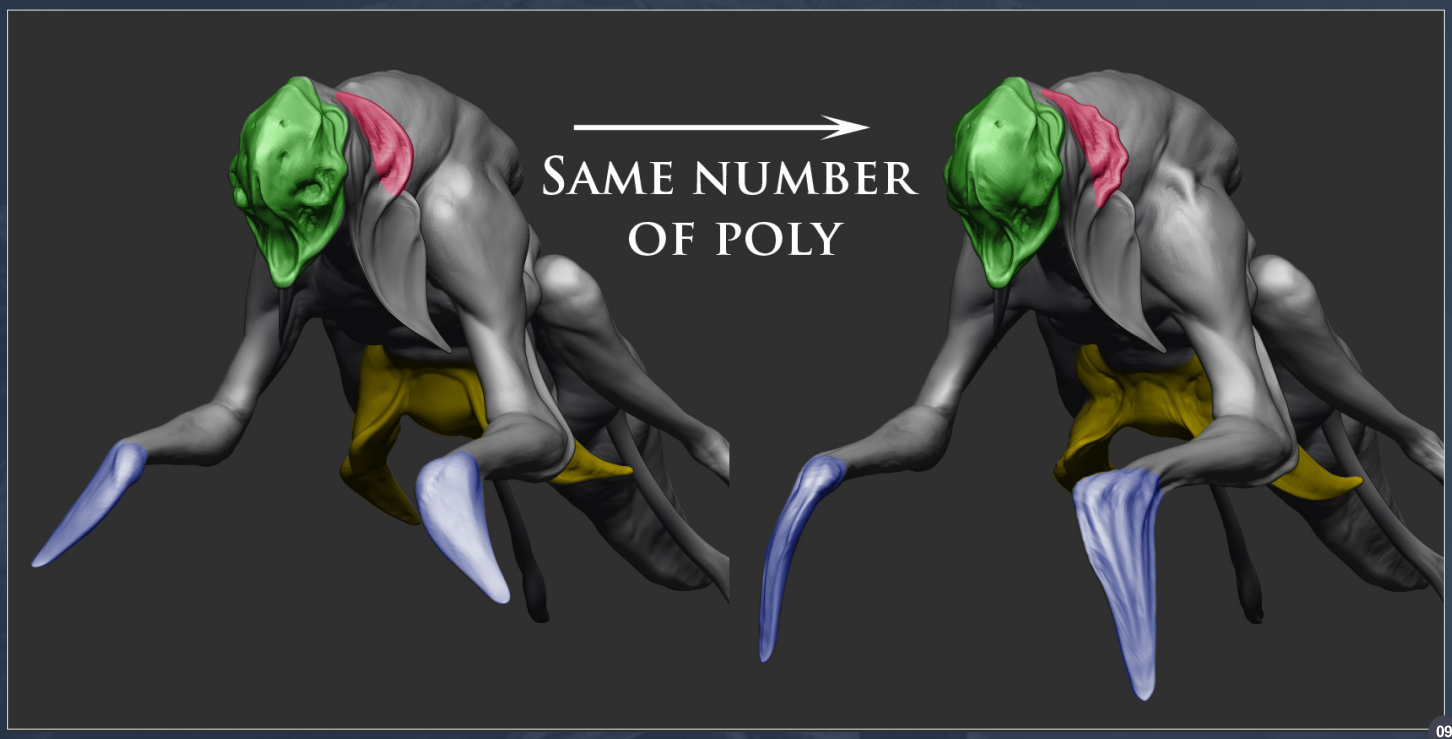
As I already said, at this stage I mostly work with the Move, Move Topological, Standard and Inflat brushes. Sometimes I also use the Transpose brush for some tweaks on the orientation of the limbs.

As with traditional sculpting, primary forms and looking for planes is an important thing to focus on. When you have some more subdivisions you can focus on placing landmarks such as bone structures that will drive the muscles placement.

Fig.08 shows the evolution from the tweaked base mesh to a level 3 subdivision. The



08



09

changes are not huge; it's more of a controlled adaptation of the mesh to include some specific features I saw on the initial model. In step 5 I started to add landmarks like the knee bones and cap, as well as some initial muscle sculpting like the shoulders and arms.

Bring the model to the next level

By now the model had most of its major features in place, so it was time to develop the existing shape. The first thing I did was take what I had and compare it to references from nature and with the initial sketches. I was looking to see if there was something that I could add or modify.

After spending some time looking at my references, I started tweaking the mesh. In the end without subdividing it more, I used the polys I had and moved them until I reached the design I was hoping for (**Fig.09 – 10**). I colored the parts that I changed in the process. Nothing drastic but the model was now starting to have a better defined structure.

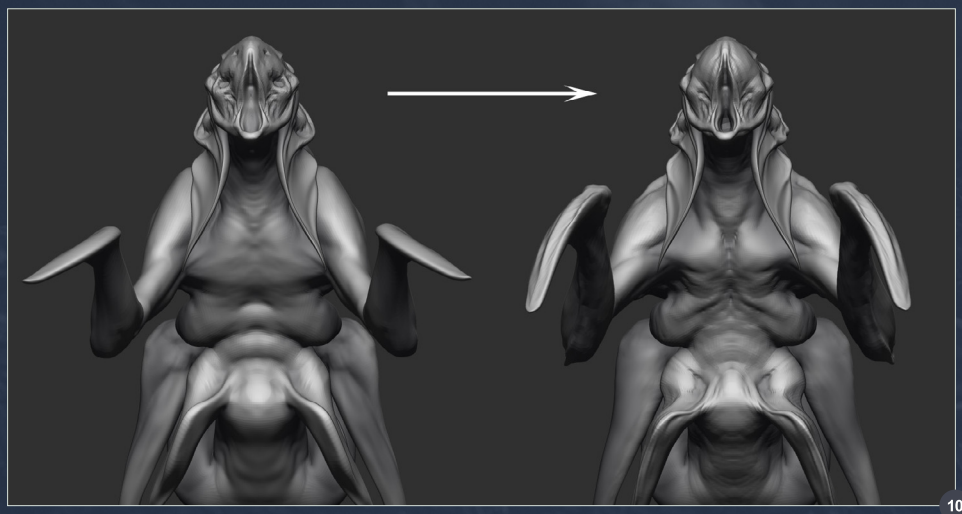
Then I started using the brushes I mentioned before, along with Clay and Claytubes with alpha06. When using these brushes I usually turn on Fast Sample (Brush > Sample) to increase the accuracy of the surface samples, giving more predictable stroke results. I also use the Backface masking features a lot when dealing with very thin surface like the ears. This prevents the stroke from passing through the surface and affecting the Backface. The Backface button is located in Brush > Masking.

These two brushes work really well when building muscle surfaces and when you have to construct planes because the strokes are very organic looking.

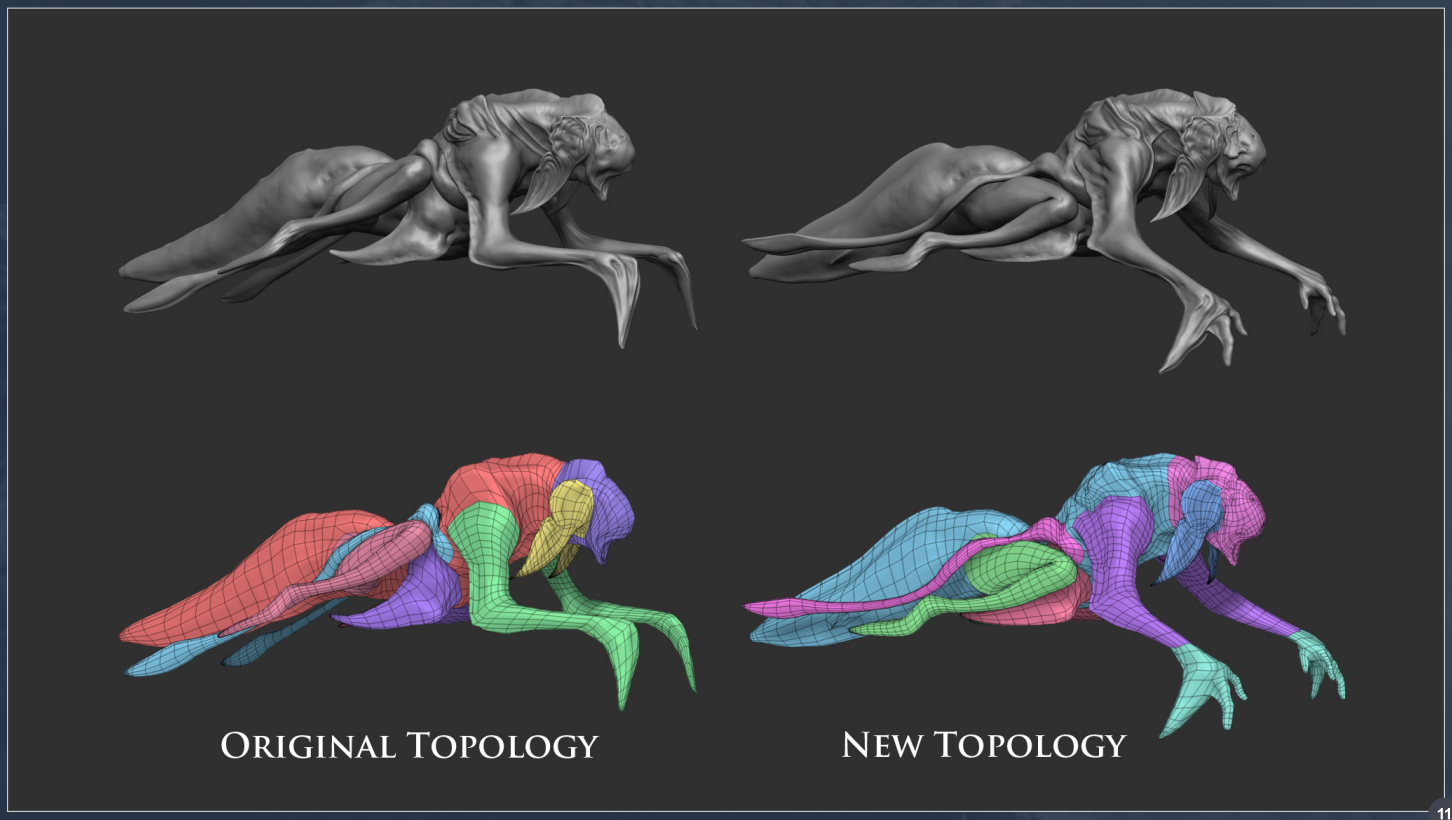
After a bit of work I decided to retopologize the model to have a better density distribution. To do this I used the new GoZ plugin that allows you to send you model back and forth between ZBrush and other software, in my case Maya.

In Maya I used standard polygonal modeling tools like the Split Edge tool, Append Poly, and Extrude along with Merge and Collapse to manipulate the mesh to my needs. The head and the hands were the parts that needed more attention because of the nature of the ZSpheres.

When finished I sent the mesh back to ZBrush and the software managed to re-project the high poly details on to the new mesh. Keep in mind that GoZ is just an automated process of



10



11

importing and exporting, which is something that you could already do if you imported an .obj where the lowest subdivision level was active for your tool. This means that you have the same projection issues you would have in the manual process, so keep this in mind.

As a side effect of the retopologizing process you will lose the polygroups. To prevent this I use this little trick: Before sending the mesh with GoZ, use the UV Master plugin to do a rough unwrap, activating the polygroups button on the plugin panel. This way when your mesh is sent to the external software and brought back to ZBrush you can always restore the polygroups from the Auto Groups with UV feature in the Polygroups menu. Obviously if you edit the topology you also have to fix the new UV, but its way faster than redoing the polygroups from scratch (**Fig.11**).

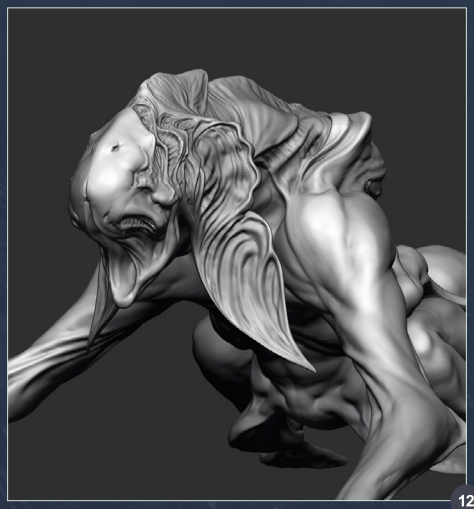
With the right topology to work with, forms started to adapt better to my strokes and I was free to define some more precise elements and patterns, like the top of the head, the ears and the loose wrinkled skin on the elbow (**Fig.12**). I took inspiration from fish like the frilled shark for some elements. The design of the gills was from an iguana and the look of the skin from a giant salamander.

Detailing

This is the second of the two hardest stages in the creation process. Detailing is a danger zone and you have to treat it very carefully. It can turn your model into a great model that people can enjoy and that generates interest, or it can destroy all the hard work you put in and turn your model into a mess. There is a simple but very important rule to keep in mind when approaching detailing: details (or tertiary forms) have to be supported by a hierarchy of secondary and primary forms. Brushing your model with alphas doesn't make it look prettier. Every wrinkle has to have a reason. Every spike or little bump should be placed in the right position.

Think of the surface of your model as a map: mountains, valleys, lakes, streets, cities, stores and bus stops have a very logical distribution. The point of this example is that you wouldn't open a bakery in the middle of the desert - the same goes for wrinkles. You would never place wrinkles where there is no need for them to exist. This could seem obvious, but sometimes it's very easy to get lost in a frenzy of detailing without taking a moment to plan.

Now, don't get me wrong, I don't have a reason for every single bump and lump I place, but for most of them there is a logical placement inspired by nature. Having fun is part of the game, but always control your strokes and judge their necessity at this stage.



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That being said, I tried to identify the areas where the skin would compress during movement and I started to create localized wrinkles, with a logical direction that followed the articulation. I used the DamStandard brush for this process. You can find it in the brushes section of Spotlight.

Besides wrinkles you have tendons and bone structure visible on the surface, and also veins and little bumps. A good aid when placing these kinds of details are references of real animals.

Generally I use the Standard brush with very low intensity and I build the details both conceptually and concretely using sculpt layers. By using layers you have full control over the overall intensity and it's always a good thing to have the ability to just turn off a layer if you don't like the result.

I moved then on to giving the gills on the monster's back a solid structure, and I looked at the neck. I used the Inflat and Pinch brushes in the areas where skin gets folded. The same goes on the tentacles, which I compressed near the legs (I didn't mention this before, but the creature has tentacles for stability while swimming, like a Jellyfish). I placed wrinkles at the end where the feet-fins are (**Fig.13 – 14**).

At this stage I also created some very rough geometry with Maya and some simple box modeling for the gums and teeth, and then imported then into ZBrush.

An example of the logical placement of a particular detail is the little depressions I sculpted just above the mouth (**Fig.15**). These depressions are not there for fun, but have a very natural explanation. Snakes, for example, have these and they are called "labial pits". They are very unique sensitive organs that allow



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the snakes to “see” the radiated heat of warm-blooded prey, like infrared receptors.

I spent some hours detailing the whole body and finally my final model was finished (**Fig.16**).


16

TEXTURING

Before starting the polypainting I exported the model’s lowest subdivision layer to Maya and created some UVs mainly using the Unfold feature with some relaxing and using the UV lattice deformer where needed.

With the UV done I started the polypainting, using salamanders and amphibians as reference. I filled the model with a medium-dark green color and painted the surface with the Standard brush, with Stroke set to Color Spray and a combination of alpha 08 and alpha 22. When painting skin try to use different colors and go for variety; variation gives skin a much more realistic look.


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In the first pass I wanted to have general variations and to set the first color scheme (**Fig.17**). I placed some red/pink colors where the skin is supposed to be more irradiated with blood vessels.


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I then baked the polypaint to a texture and create a displacement map to be used on top of the texture to get some depth when used as an Overlay layer, and also to have a guide as to where to paint in Photoshop (**Fig.18**).

I imported the texture into ZBrush and baked the texture to polypaint from the Texture palette on the Tool menu.

I then used Cavity Masking to paint different tones for different depth levels. Since the texture seemed to me a bit dark and green I tried to get a different color variation in the skin. When most of the features were in place I decided to bake the polypaint to continue the paint job in Photoshop. Here is the texture before using Photoshop (**Fig.19 – 20**).


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Once in Photoshop I was free to use some photographic textures. The best ones for this kind of texture come from the Total Texture DVDs by 3DTotal because of their great variety and flexibility. I used some masks to get the right placement for the textures in order to place the right patterns where I needed them to be.

Then, using the Standard brush along with some custom brushes, I started painting. At first I tried to follow the details I already had and reinforce them. Using the depth information I had from the displacement I had a very clear idea where to place additional elements. You don't want to hide your sculpted details but paint on them to reveal the nature of the surface.

At this stage I used some reference to get inspired, besides nature is a very valuable material to study, as is the paint job done by maquette artists or make-up artists like Jordu Schell or Rick Baker.

This is the final look of the texture I then used in Maya for the rendering (**Fig.21 – 22**).

The gums and teeth were also polypainted using the same method described earlier, and then the polypaint was baked into a map and the models were UV mapped using the PUV Tiles inside ZBrush (**Fig.23**).

Posing

Posing a character is not easy. You have to grasp not only the action but, above all, the essence of the creature. This gives credibility to its structure and the impression that the "animal" is actually living and doing something. I had an idea inspired by iguanas in mind for his pose. When you see them moving slowly, their arms seems to grasp the air whilst they move forward.

For posing I use Transpose Master, the new plugin for ZBrush4. There is a button named Layer which is a real time saver. It creates a new sculpting layer for each subtool with the new pose so you can switch back to the original pose at any time.

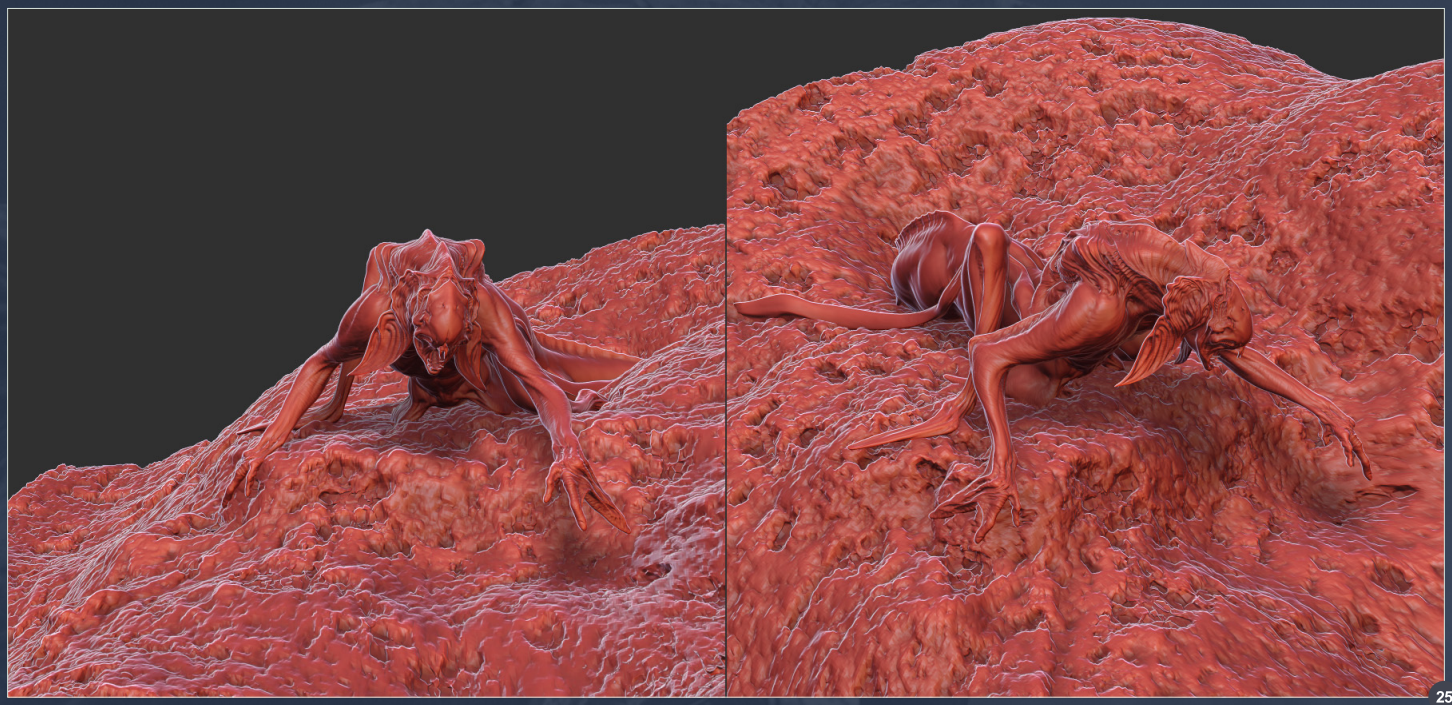
Using Topological Masking I started rotating the torso to conform it to the action; the same goes for the limbs and head. I paid particular attention to the legs and feet because I wanted to show the hybrid nature of the feet. They are fins but because of their solid bone structure they could also be used as anchor points for moving around.


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Once happy with the pose I transferred it to the high res sculpt and with the Standard brush I adapted the skin where needed locally (**Fig.24**).

Ground Modeling

To create the ground element I used a 3D plane converted to a PolyMesh and positioned it under my creature. Then in the lowest subdivision layers I adapted its surface to support the creature's action with the Move and Move Elastic brushes. Once it was subdivided I sculpted it with the Clay brush to mimic a mud environment.



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Next I applied different surface noises to different subdivision levels. Surface noise can be found in Tool > Surface and it displaces the surface following a profile curve in the surface slot. If you grab a curvature point in the noise curve, drag it out of the graph and then come back to the graph, you will have a linear break in the curve which is very useful when it comes to creating interesting valleys.

I applied different curves to different subdivision levels, taking care to change the Noise scale each time just to give some variety and randomness (**Fig.25**). Don't forget to press the Apply to Mesh button when you're happy with the look of your surface noise since it's behavior is to show the end result but not automatically bake it. You have to press that button to transfer the noise displacement to the mesh.

MAYA IMPORT AND ENVIRONMENT ELEMENTS MODELING

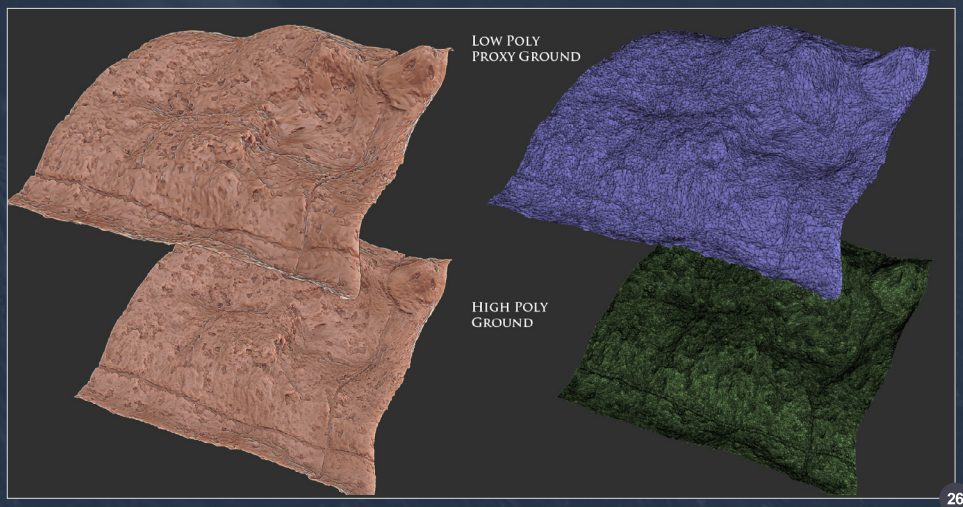
For the creature I exported a mid-resolution level mesh and baked a normal map to get the higher subdivision details.

I then exported two different ground meshes: one decimated at 30% to become my high resolution mesh and another version decimated at 2% to be the low poly mesh and to be used as a proxy (**Fig.26**). Once in Maya I create UVs for the ground by setting the viewport as Top and using the Create UVs based on camera button from the Create UV menu.

The gums and teeth were exported at their highest level because they were not that heavy, and before exporting them I used the PUV to bake the polypainting onto the textures.

The rusty iron tubes were made using a polygonal cylinder with 12 subdivision axis and an evenly spaced number of subdivisions for its height. I extruded every other face to get variety in the surface depth going around the cylinder. Then, using a Non Linear Deformer called Twist, I twisted the cylinder to give it the appearance of steel tubes placed in reinforced concrete. I then create some UVs for the tubes using cylindrical mapping.

The grass was made with Paint Effects. First I made the proxy ground paintable (Make Paintable button on the Paint Effects menu). Then I searched in the Visor for the type of grass that I needed, and I started painting on the surface of the ground by placing the grass where I wanted it to be. Strokes like this often need some adjustments so you can modify them after they have been painted using the Stroke



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Attribute editor. I played with its settings a bit and when happy with the look of the grass I converted all the strokes to polymesh by going to Modify > Convert > Convert Paint Effect to Polygon (**Fig.27**).

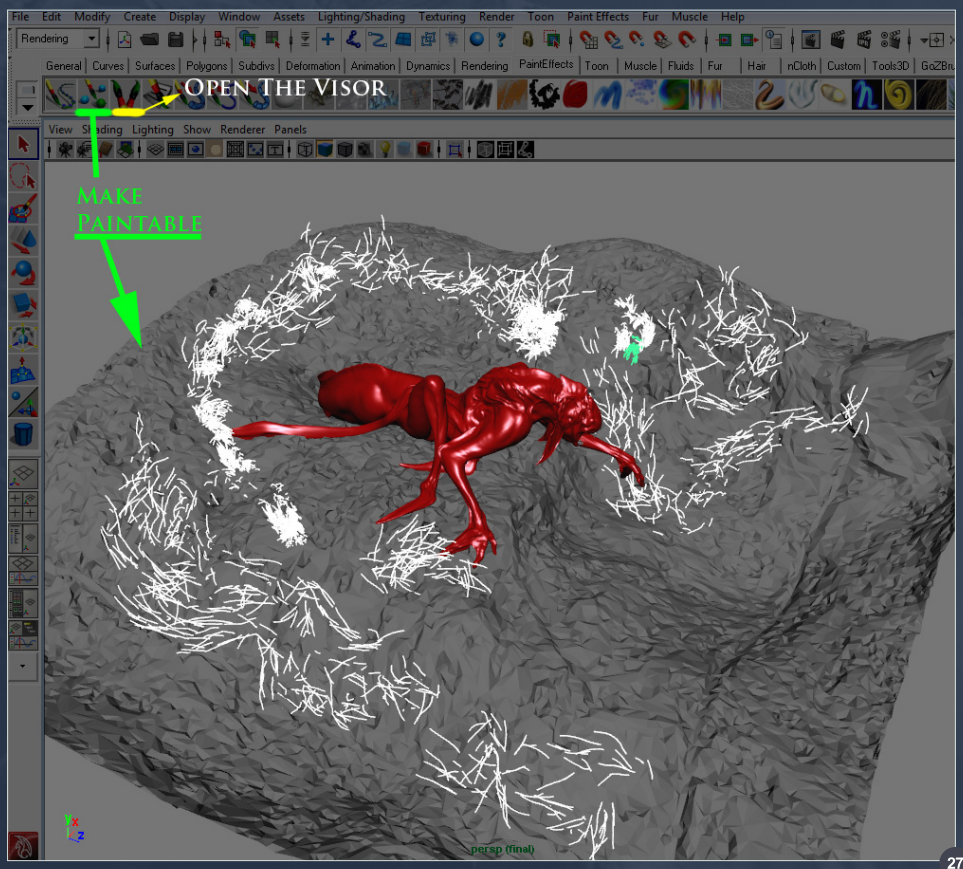
The background is half of a cylinder with the face normals inverted, just to give the impression of a round concrete surface.

LIGHTING

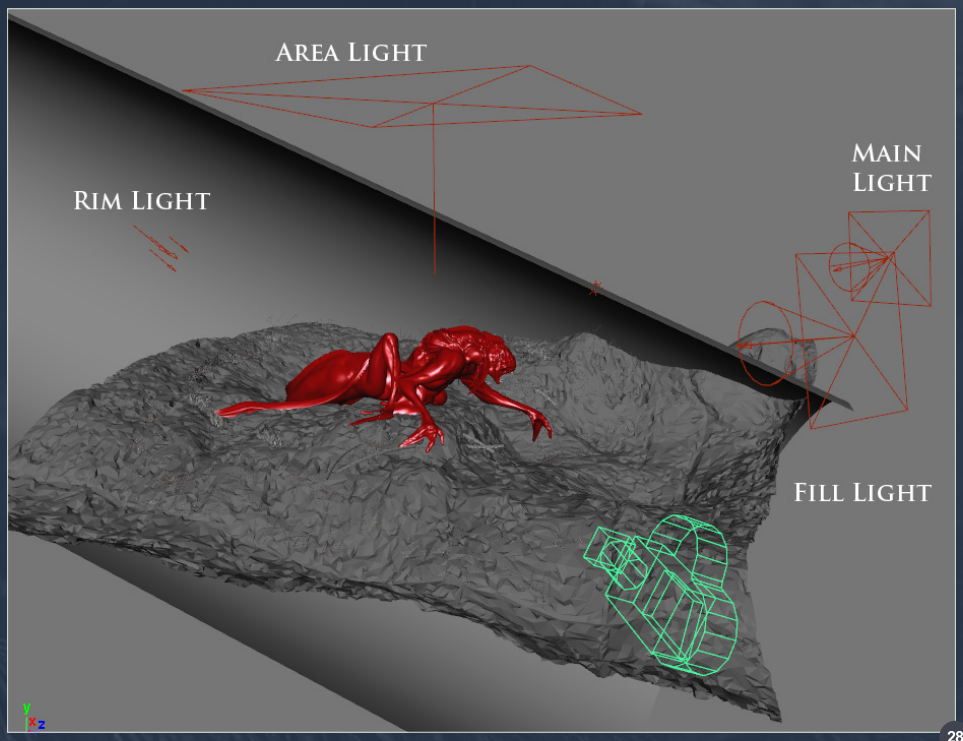
Since I was going for a real environment, trying to mimic that environment lighting was the key to creating a realistic mood. Lighting is important to tie together all the elements of the image. With fake environment lighting it's very difficult to give the viewer the impression that the situation portrayed is actually happening.

For this image my idea about what's happening is that the creature is emerging from the darkness of the underground, maybe to find some food or just for curiosity. It is slowly approaching the land above, where the underground tunnel comes from.

Generally speaking, viewers' eyes are attracted more to the light than to the dark, and the same could be said for warm and cold colors. For this reason I created a Spotlight with a warm orange-ish color facing the creature to serve as my main light. I then created a second Spotlight positioned to the right, a little higher than the camera, to be my fill light and represent a sort of environment lighting or bounced light coming from the environment. Both the spotlights have the Decay rate set to Linear to give a gradual falloff on their intensity. Behind the creature I placed a direct light to create my rim light. This helps a lot to enforce the silhouette of the creature and to make it stand out from the background. To create an overall dramatic mood I also placed an area light above the creature to mimic the sky or an opening in the ceiling (**Fig.28**).



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To have better specular on the ground I then created a Point light, activated just the specular component and disabled its Diffuse Contribution. Then I placed it at the right angle to affect the ground surface specular the way I wanted it to. Because I didn't want this light to affect any other element of the scene I opened the Light Linking editor (Window > Relationship Editor). Here you can set the inclusion or exclusion of single objects from each light.

SHADING

For the creature I used the mental ray "Misss_ fast_skin" shader. It can seem a bit tricky to set up but the key to mastering this shader is to split its setup into several steps.

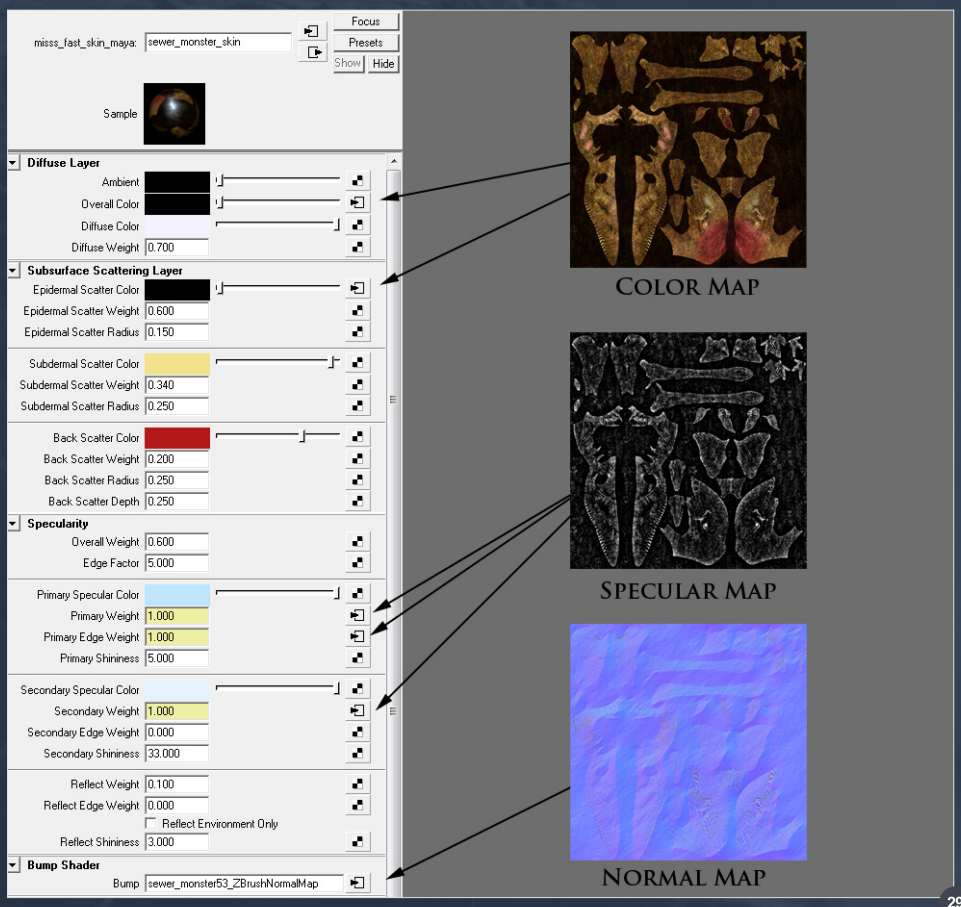
To precisely set up the SSS componant I set the Diffuse weight and the Specularity overall weight to 0. Then I started from the Backscatter Layer and turned the Epidermal and Subdermal Layer weights to 0.

You then basically have two parameters to set. One is Weight, which can be seen as the intensity, and Radius (and Depth that I usually set at the same value of the Radius), which is how far the light penetrates into the skin.

I then did a test render to see how the shader looked with the default values. I wanted the Intensity to be very evident, so I set the Radius in such a way that if the Intensity value was too low it would be easy to understand how much it would change if I turned it up a bit. Then I started tweaking the Radius and Intensity values. If the Radius or Intensity are too strong then you can halve their values and do a render and so on until you get the settings you feel are right for the kind of skin you're going for.

Once the Backscatter is ok, I usually write the Intensity value in a notepad to remember the setting and then turn it to 0 so it has no effect and move on to the next layer, the Subdermal. It's difficult to say how the Subdermal layer should look. My idea is that this is a deep layer that should soften the shadowed area, but not be too intense. I used the same process for the Backscatter layer and once done copied the weight value on the notepad and turn it to 0.

Then for the Epidermal layer I used the same process. This is the nearest layer to the surface so its intensity is higher than the Subdermal, and it contributes more to the diffusion of the light through the surface.



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Once the three layers were ok, I copied all the values I'd written in the notepad to the respective layer weight fields and I had the SSS component set up. Then I turned the Diffuse weight to 0.6 or 0.7 depending on the kind of texture I had and did a test render.

The specular component was easy to set up and this shader does a very good job of representing the specular component. I also created a specular map for it so I could set the intensity of the specular where I wanted. This is very important to give a realistic feeling to the skin (**Fig.29**).

For the ground I used a simple Phong shader. In its color slot I placed a 3D "snow" texture and plugged in two different ground textures from the Neanderthal set of the Total Textures V9:R2 DVD in each color slot. I used the specular and bump maps of the same texture for the specular color and bump of the shader.

The concrete and the rust come from handmade textures created from a photo and custom brushes and they are a simple Phong shader, nothing too complex here.

Ok so every shader was set and the lighting setup was done. Time to render the final image (**Fig.30**)! Besides the beauty pass I also rendered two separate passes, a Color ID pass and a ZDepth pass.

For the Color ID pass I used a different surface shader for each element in the composition so I got a flat colored result without the shading component (**Fig.31**).

For the ZDepth pass, since it's a bit tricky to setup in Maya, I downloaded a great shader called "p_z" that is part of a downloadable pack of shaders and utilities created by Ledin Pavel. You can download the whole pack from his website: http://www.puppet.tfdv.com/download/shaders_p_e.shtml.

Once installed you will find it on the mental ray shader tab. The setup is very easy. Just assign the material to all the objects in your scene and set the near and far clip plane just as they were in the extreme limits of your depth of field. Once rendered you will have a depth pass to use in Photoshop later (**Fig.32**).

Final Photoshop post editing

This is the relax stage. All the work has been done and now it's just a matter of tweaking the image and getting the best out of it!

At this stage I generally start doing some level and curve adjustments to push the value of my image until I like it and to pump up the contrast a bit.

To create the effect of the moist air I used the ZDepth pass as a mask and filled a new layer with a white/bluish color. This created a sort of fog effect that I tweaked until I felt it was right for the image.
I then used color balance to give the image the right mood and added some more curve adjustments to get the Cross Processing effect, which is where you use the lighter value to have a different tint than the darker one.

I used some more post processing to get the depth of field using the Lens Blur filter with the depth map I rendered earlier.

I then added a bit of breath smoke to give the impression that the environment is not just



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humid, but also a bit cold. Then as a final touch I added some strings of saliva in the creature's mouth using a Standard Round brush.

Conclusion

This project was very challenging. I tried to push myself to do better in many fields, not only the modeling but also the design, shading, lighting, composition - all the different aspects involved when creating an illustration from scratch.

I hope that this long article can show you much more than the techniques I used to create the final image. I hope it also lets you understand a method you can use to develop a believable character (**Fig.33**).

Thanks very much to the *3DCreative* magazine team for this great opportunity and thank you very much for reading the article!

For any info or to share any feedback please feel free to contact me here: fede@federicoscarbini.com

Thanks again, and happy sculpting to everyone!



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3DC next month

Here is what's in next months issue of 3dcreative

Tutorials

Creating the Celeritas (Spaceship)
Chapter 2 - Modeling the Low-Poly Version
by Djordjie Jovanovic, Luigi Terza & Tamás Gyermán

How to Stylize and Model Toon Animals / People
Chapter 6 - Materials & Lighting
by Jose Alves da Silva

The Italian Courtyard Unreal Games Engine Tutorial
Chapter 2 - BSP Creation - Draft lighting
by Andrew Finch

ZBrush Monster Character Creation
Chapter 3 - Subterranean
by Marc-Olivier Plouffe

Interviews

Jian Xu

Galleries

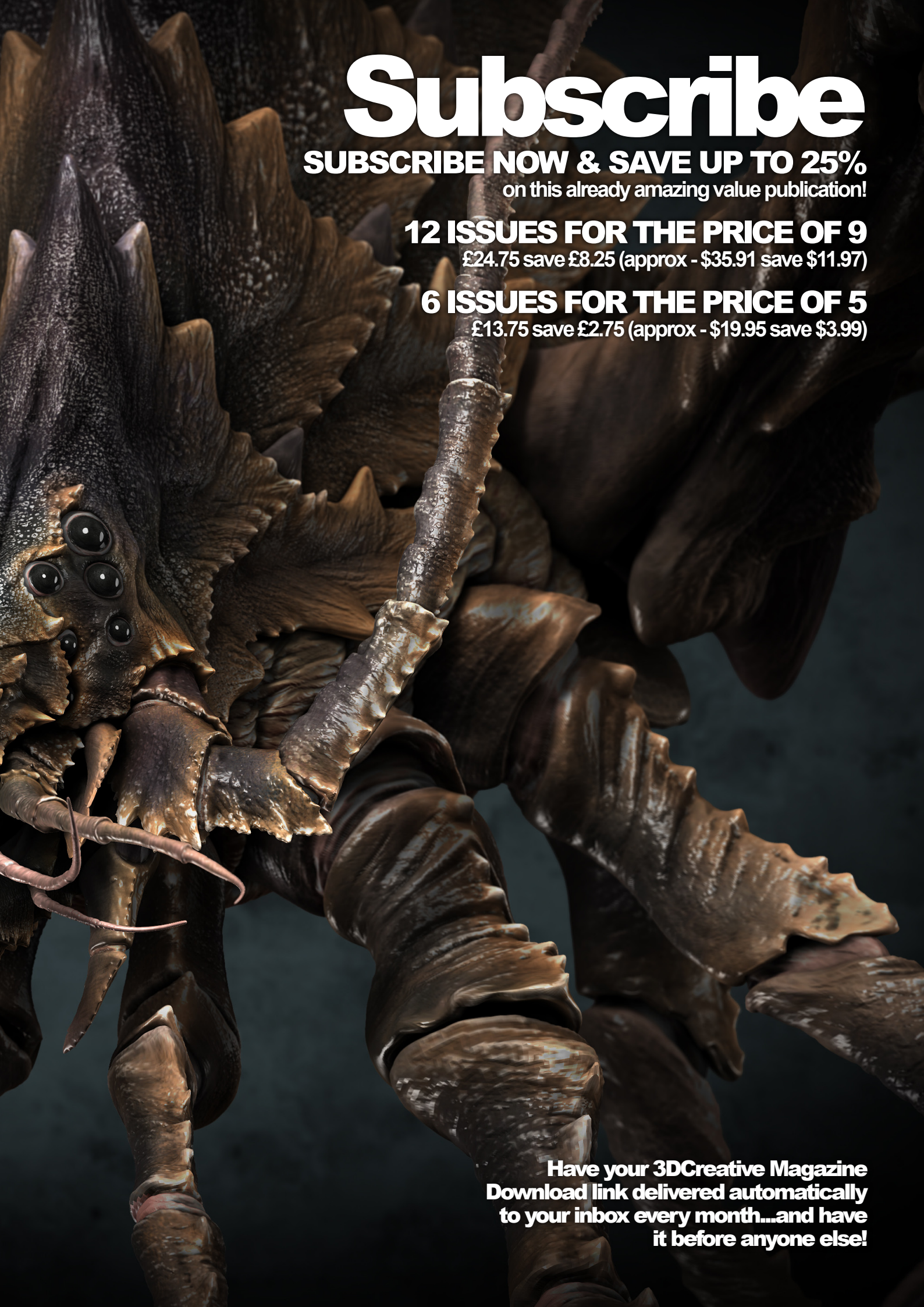
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MAKING OF

MURSI TRIBESMAN

I am sure you will remember this amazing image from the June issue of 3DCreative. Adam Skutt tells us how he created his breathtaking image Mursi Tribesman and explains how important it is to gather good references before starting a project such as this one.



"The canvas print translated well from the 3D image and now graces my living room. I encourage anyone creating an illustration to look into printing options."

MAKING OF MURSI TRIBESMAN

Software used: ZBrush, Maya and Mental Ray

The Mursi Tribesman image was a way for me to test out different techniques I had learned during my four years at school. Realism was not my focus in this piece but rather creating a painterly CG illustration that I could have printed on a canvas. This way I could test my modeling, texturing, lighting and shading skills all in one project while still working towards my degree.

I started off by finding as many references as possible. I wasn't sure exactly what I was going to create but I knew it was to be witch doctor-esque. I ran across the Mursi people of Ethiopia and found their traditional head dress and the contrast of their AK's to be an interesting subject matter. I decided I wanted to make a tribal elder or leader. His frail elderly body contrasts with his position of power within the tribe as well as his calm but controlling gaze.

I began sculpting with an old base mesh I had saved from a previous project. I brought it straight into ZBrush and began pushing and pulling with the Move tool to achieve the general proportion I was after. Once I was happy with proportions I broke out the Claytubes brush and began sculpting in secondary forms.

I try not to skip ahead at any one part of the model and over-detail it early on. During this stage I focused very heavily on muscle, bone and overlying fat deposits. I started with sculpting the muscles and protruding boney structures in the correct position and then layering the body's fat deposits over top. The sculpt has a more natural look to it when I take this approach, and once the muscles are sculpted it's easy to reduce or add fat layers.



01

After I sculpted the secondary forms I began the skins wrinkles and creases. I find what works best for me is to start laying in directional lines using the Standard brush for the wrinkles. Once I'm happy with the general flow of the wrinkles I use the Inflat brush in between them, and finally I clean it up with the Pinch tool. The finishing touch is to use alphas to add more detail or enhance the details I have already sculpted (**Fig.01**). I rely very heavily on photo references for this stage. Wrinkles go in certain directions on the face and to make them believable it's best to follow reality.

Once I was happy with the model I took a medium res version into Maya and used NexTools to retopologize. This isn't a necessary step when modeling for a still image but I felt it was good practice and I wanted as much geometry on the face as I could get. I then took the retopologized mesh back into ZBrush and re-projected.

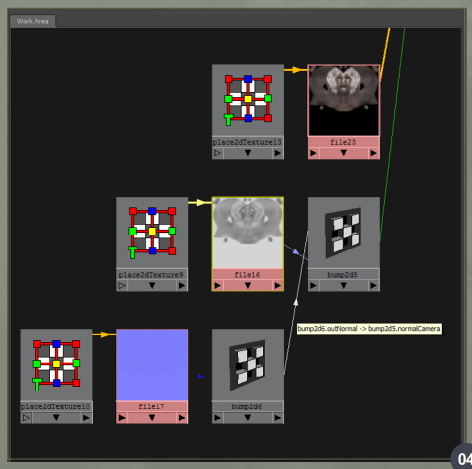
I created the gun entirely in Maya,.Although ZBrush has some awesome Hard Surface tools now I still find it much easier and faster to create certain hard surface elements within Maya. Before I exported my medium res version of the Tribesman for render in Mental Ray I transposed his arm to hold the gun I'd created. The modeling process for me is usually the quickest stage, especially if I take the time to find nice reference images.



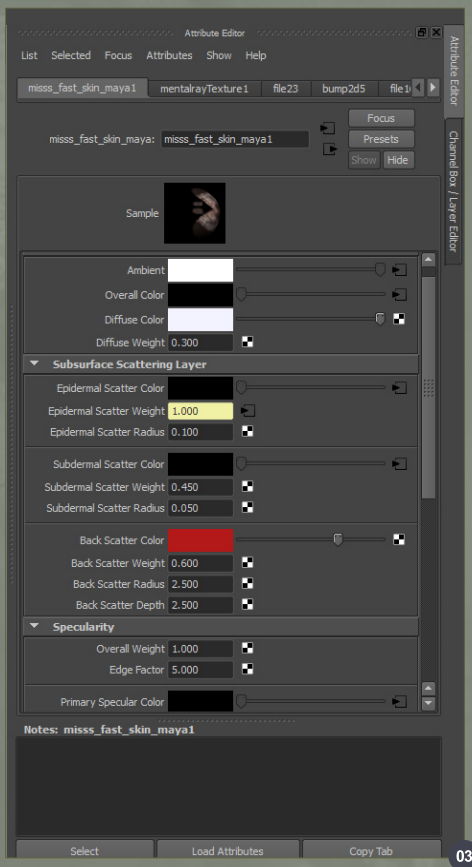
02

Using ZBrush I baked out a 4k normal map for a mid res version. I used the mid res version for renders rather than the low poly with a displacement. I find that it renders faster without using displacement and if your computer can handle the larger poly count Maya scenes then why not.

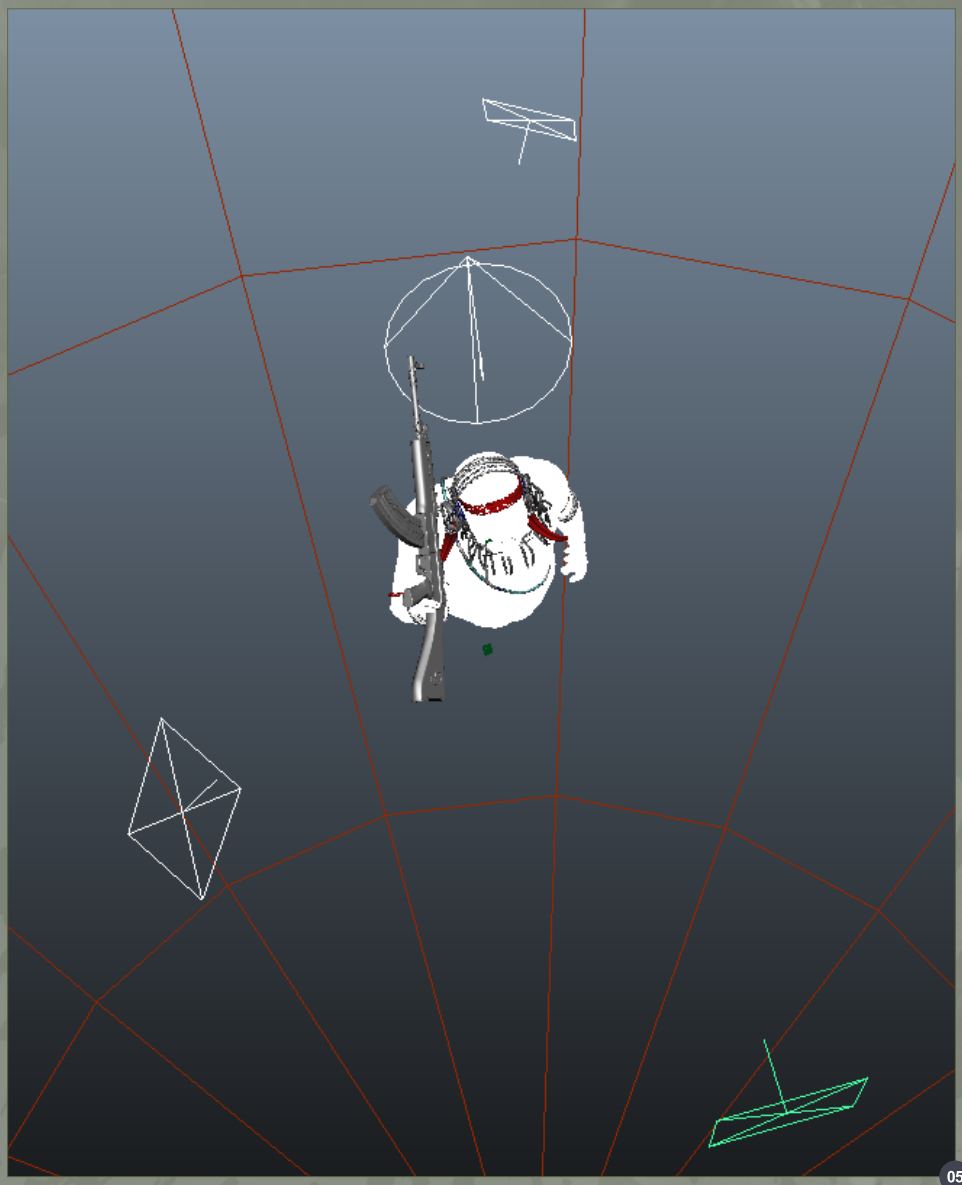
For the skin texture I used 4k camera projections then baked the projection to texture. Using this technique allowed me to create a corresponding 4k bump map with a 100% registry. I used the Mental Ray fast skin shader to achieve the subsurface scattering and for a more realistic skin result (**Fig.02**). I made sure to account for the opacity of the paint in the epidermal weight map and as well in the bump so it didn't appear to be a part of the skin but rather a thick dried paint (**Fig.03**). For the skins weathered look I combined two maps. In the skins bump slot I hooked up the bump map and then attached the normal map's bump node to



04



03


05

the bump node from the bump map. By using this technique I was able to keep the wrinkles I'd sculpted in ZBrush as well as the bump created from the texture map (**Fig.04**). I also used the mental ray fast skin for the horns in order to achieve the subtle hollowed effect. From there it was a matter of tweaking values to achieve the look I was going for in each shader.

To achieve nice soft shadows and realistic lighting I used a HDRI in the image based lighting node. I then placed area lights for some rim lighting and to brighten up certain areas (**Fig.05**). I used Photoshop for post effects such as scratches and color correction to give the image an aged and worn look.

From start to finish the project took about a month to create during my last semester at school. The canvas print translated well from the 3D image and now graces my living room. I encourage anyone creating an illustration to look into printing options. Having your 3D art hanging up in your apartment or house is just plain sweet and people will always ask how you did it!



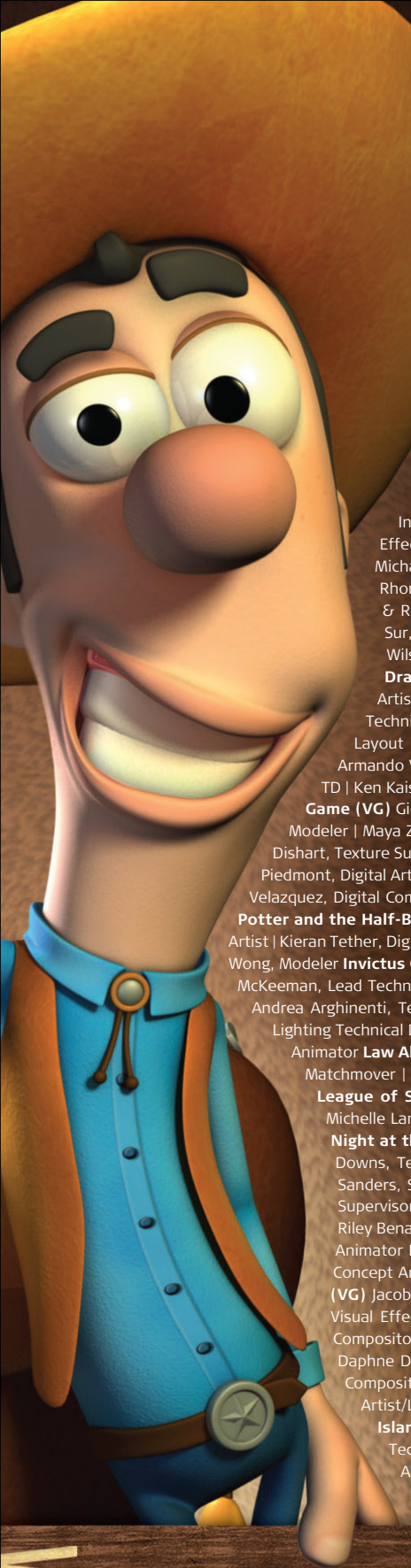
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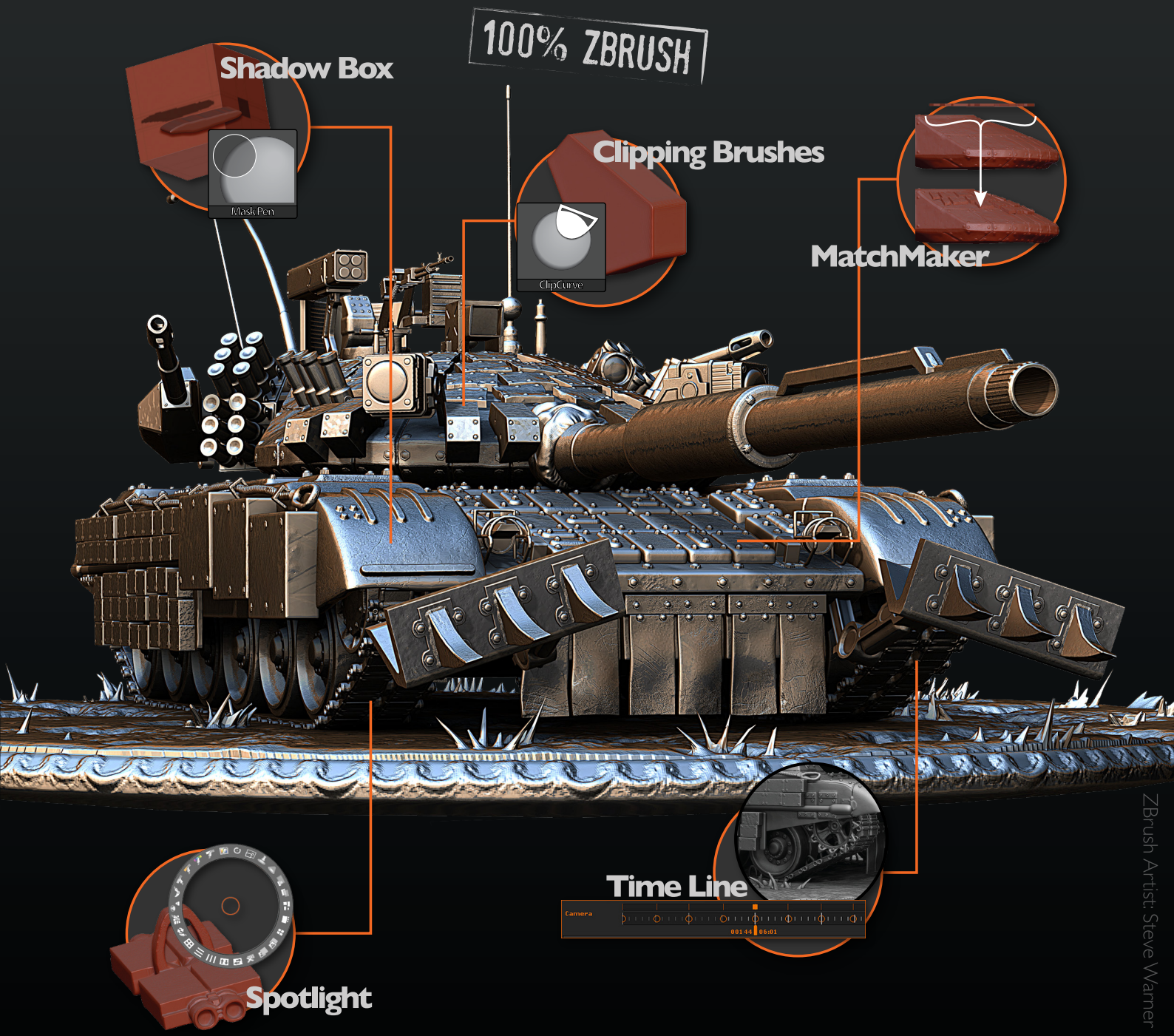


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Digital Art Masters Volume 5



With the release of 3DTotal's latest book, *Digital Art Masters: Volume 5*, we have some exclusive chapters for you...

This is more than just an artwork book. Not only does it feature full-colour, full-page images, but each artist has given a detailed description, in their own words, of the creation process behind each piece of published artwork. And they've done it especially for this book!

This month we feature:

"Steamnocchio"

by Fabricio Moraes



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The following shots of the “Steamnocchio” book pages are featured here in full-resolution and can be read by zooming in...



Steamnocchio

By Fabricio Moraes
Job Title: Character Artist
Software Used: 3ds Max, Mental Ray, ZBrush, Photoshop



Introduction

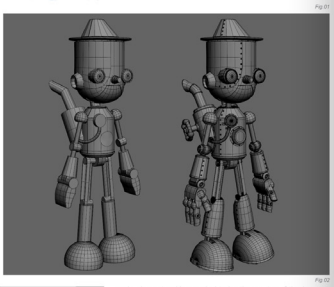
I have always thought that the steampunk theme is a very interesting one. When CGSociety decided to create a new challenge using this subject, I asked myself: why not give it a try?

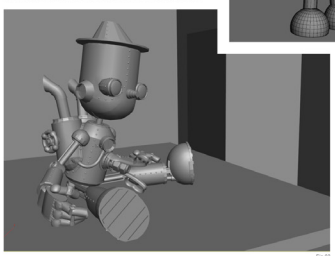
I chose Pinocchio because he is a well-known character and because of his artificial nature. He is a wooden marionette, so I imagined it would be nice to turn him into a mechanical steam robot. In this version, Geppetto is a mad and lonely old man. Since he has no friends at all, he decided to make one. With no magic or “abracadabra”, he brought his creation to life with steam power. I didn’t want to make these characters too similar to any existing representation, which is why Geppetto is fat with a crazy look.


Fig.01

> “He needed to be the centre of the image, grabbing the viewer’s attention and leading it across to Geppetto”

From the start I wanted to make the work look simple, with nice details, but I also wanted to focus on creating an easily readable composition with Pinocchio as the main character. He needed to be the centre of the image, grabbing the viewer’s attention and leading it across to Geppetto. I also wanted to make a realistic caricature, with strong expression and movement.


Fig.02


Fig.03

I did some research and tried some sketches until I came up with this one (**Fig.01**). It is more a sketch than a concept, but it was very useful when it came to developing the idea.

Modeling

I started the modeling with Pinocchio, who is very basic and made up of simple geometry. I positioned the primitives to set his proportions and refined each one of them to assemble the final form (**Fig.02**).


Fig.04


Fig.05


Fig.06

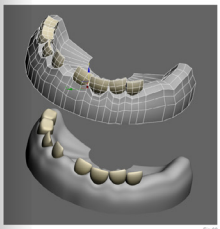
Before I finished the model, I placed it in its final position, as shown in **Fig.03**.

The posed Pinocchio helped me to find the right camera position and set the proportion of the environment. For me, working with posed models in the final camera view is the best way to see which details will have focus in the scene and which elements will be unnecessary. The box on the left was a proportion reference for Geppetto.

With the camera and environment proportion set, it was time to start Geppetto. He was much more complex to model because of his pose and expression. I wanted to make a strong and exaggerated pose expressing strength and madness, but at the same time conveying a cartoonish look.

I started by making a base mesh in a neutral position. Next I applied a basic rig to “sketch” his pose, which was then refined in ZBrush (**Fig.04**). It was easier for me to bring an already posed mesh into ZBrush to tweak it.


Fig.07


Fig.08

I made the goggles using a box modeling technique and positioned them according to Geppetto’s initial low-poly pose (**Fig.05**). I didn’t use any special techniques to make the goggles. They were based on some references taken from the internet and I began modeling them from two cylinders, which were very fun to make. The eyes were very important for this character because they showed his personality. He is crazy so I wanted to make very big, round eyes, refracted by the goggles. Refracting the original eyes through the goggles looked weird so I made a separate mesh for the eyes and eyelids and positioned this closer to the lens, as shown in **Fig.06**. When this mesh was refracted it exaggerated the effect.

Back in ZBrush I started to add details to Geppetto (**Fig.07**).

When he was done, I simply exported the high-poly mesh back into Max. It wasn’t necessary to work with a displacement map as I think a very high-poly mesh is easier to render than a mesh with a Mental Ray displacement.

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I made the teeth later in Max, again using the box modeling technique (**Fig.08**).

For the hair, the native 3ds Max Hair and Fur application, rendered with Scanline in a separate file, did the trick.

Now, with both of the characters modeled, I was able to focus on the environment. I was cautious with the elements because I didn't want anything to appear in the scene that wouldn't make sense. Some tools on his table, shelves full of gadgets and machinery based on a locomotive fit into Geppetto's workshop. I didn't pay much attention to details since the environment was secondary and I didn't want to draw too much attention to it (**Fig.09**).

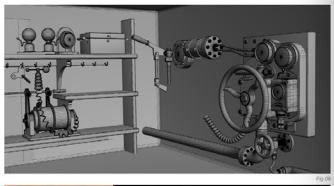


Fig.09

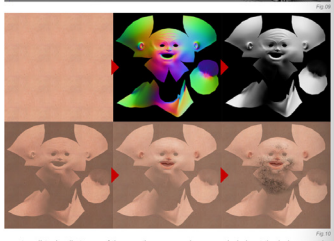


Fig.10

> "In all stages of the creation process I was worried about the balance and simplicity, as the final result had to be easy to understand"

Texturing

The UV mapping was quite easy. For Geppetto I used regular unwrapping tools and for the rest of the scene, including Pinocchio, I used simple UV mapping coordinates such as Box and Cylindrical.

I collected some dirty metal, wood, gauges and fabric maps and blended some in Photoshop to make the textures. I downloaded some of the maps from CG Textures. For the background I repeated some textures since they would be blurry. The main idea here was to make neither a very clean environment nor one that was too dirty. In all stages of the creation process I was worried about the balance and simplicity, as the final result had to be easy to understand.

Fig.10 shows a walkthrough of how I created Geppetto's diffuse maps. At first I made a base for the skin by mixing procedural maps. I took the green channel of a World Space normal map on his face and set it to Multiply to add volume and more contrast and then added the dirt layer.

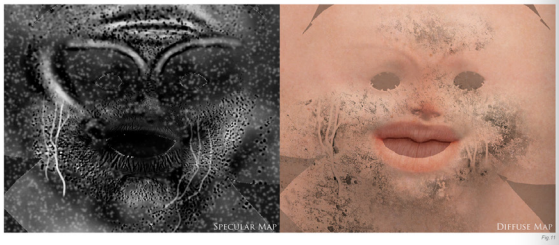


Fig.11

Geppetto is in a closed, warm room and so he should look like he is sweating. To achieve this I added a specular map in his material and set a higher specular intensity. After that, I used this specular map to mask the dirty layer on his face, meaning that, where the sweat had run, his skin looked a little cleaner (**Fig.11**).

I also turned the shirt's diffuse map darker under the arm and on his back to make the shirt appear sweaty too.

Fig.12 shows Geppetto's head material.

After almost losing my mind over figuring out how I would model the hose attached to Pinocchio, I came up with the idea of using a normal map. It worked better than I expected. I generated a procedural fabric map from Maya and used Nvidia's plugin for Photoshop to make the normal map (**Fig.13**).

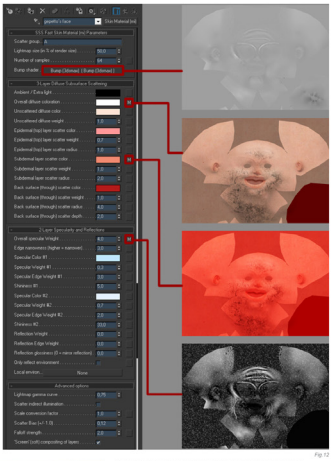


Fig.12

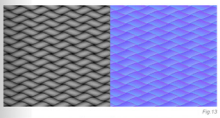


Fig.13

Lighting

I used Mental Ray to render, and used one single Omni light to illuminate the whole scene (**Fig.14**).

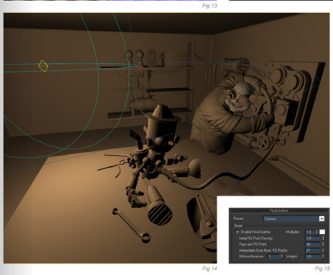


Fig.14

I wanted to convey the feeling of an enclosed room illuminated by a lamp, but without it feeling too claustrophobic and dark. The Omni had a far attenuation set to falloff stretching into the background.

Pinocchio needed to be the most illuminated element in the scene to draw attention to him – as mentioned earlier, I wanted him to be the first thing the viewer noticed in the image, followed by Gepetto. I therefore put him in a darker area within the middle range of the main light falloff.

I forced Final Gather to generate the secondary light source, therefore lacking the need for any other lights (**Fig.15**).

I gave almost all the materials glossy reflections so that they really reflected the walls, table and other elements, generating a better interaction between them.

Fig.15

Composition

For me this was the most important stage in this work. Here I could calibrate the light and supply the extra mood that was missing. The final render didn't even get close to the end result, but I didn't worry because in Photoshop I could make things look right.

I made six render passes (**Fig.16**).

Before rendering, I separated the objects into 3ds Max layers, leaving one layer visible and all others invisible to the camera. This meant that all the objects would cast shadows and be reflected by the rendered elements, but would not appear in the render pass. It is much easier to control the entire composition using separate passes like this.

The hair pass followed later (**Fig.17**).

Then the raw render (**Fig.18**).

Fig.19 shows the color correction and occlusion pass set to multiply.

Glow, depth of field and light effects done by hand can be seen in **Fig.20**.

Steam made by Photoshop brushes can be seen in **Fig.21**.

The final composition culminated in placing all the passes together, then applying some color correction towards warmer tones and adding contrast and effects such as glow, depth of field and smoke.



Fig.16

Conclusion

From the very beginning I was always worried about the clarity of the main idea. I wanted people to see it and know immediately what was going on. That's the reason I blurred the background and put a light right on Pinocchio so as to draw attention to him. Considering the feedback I got, I believe that I achieved my objective.

I made this twisted version of Pinocchio with full respect to the original creator of such an amazing story: Carlo Collodi.



Fig.17



Fig.18



Fig.19



Fig.20

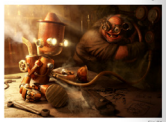
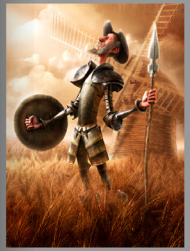


Fig.21

Artist Portfolio



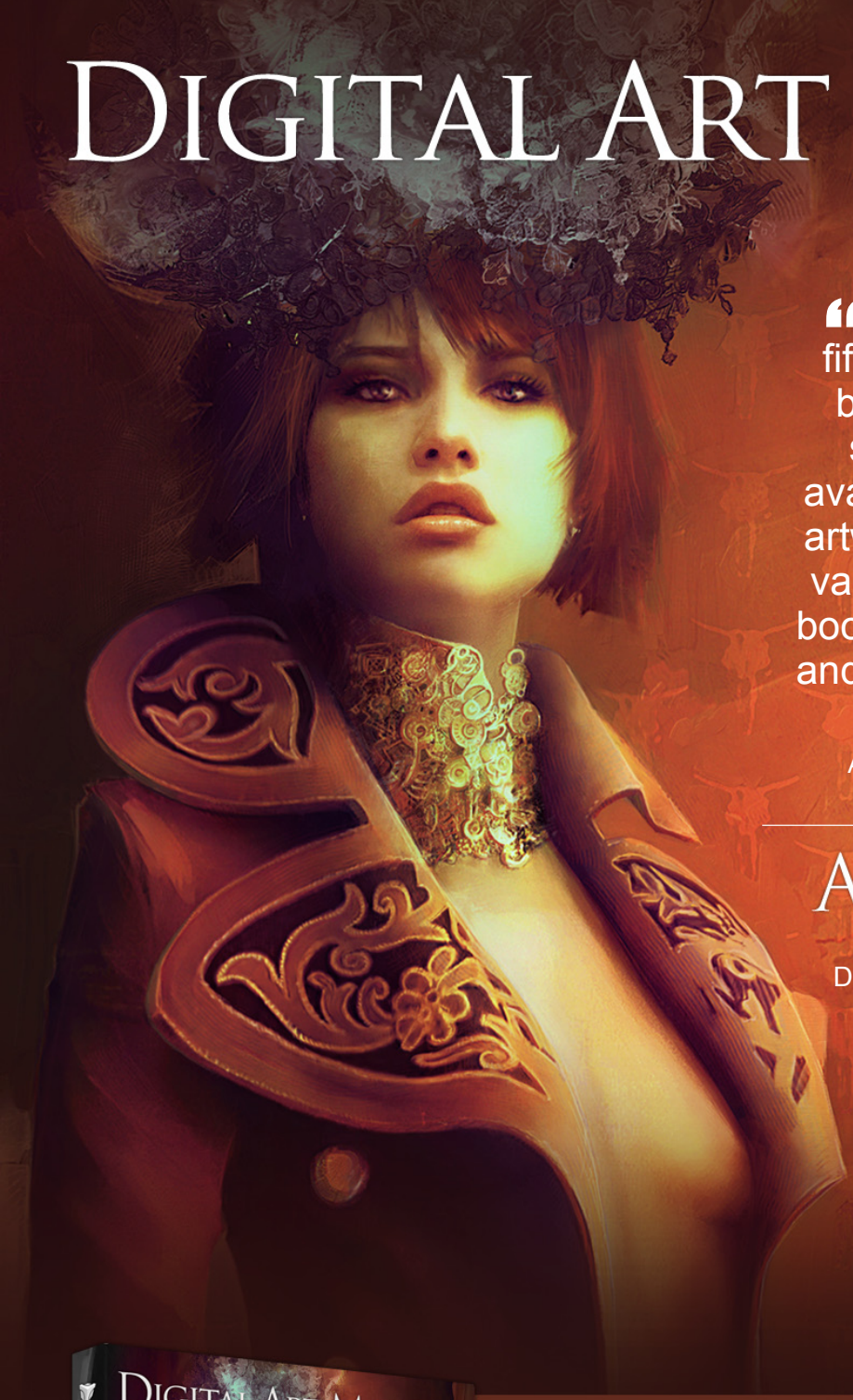




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DIGITAL ART MASTERS
:VOLUME 5



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Following on from the success of our first four books, we received yet another overwhelming response to our call for submissions for Digital Art Masters: Volume 5. Once again over 1,100 submissions made their way into the Digital Art Masters mailbox, proving to us that the series is becoming ever more popular with not only our readers, but artists around the world too!

From this massive number of incredible entries, the 3DTotal team began the difficult task of choosing approximately 300 images to take through to the next round. To help in the task, we enlisted the help of industry professionals Tim Warnock (matte painter), Till Nowak (3D artist) and John Kearney and Chung Wong (videogame artists - VooFoo Studios) to be our guest judges. These wonderful artists braved the headaches of a grueling judging process and helped the 3DTotal team to select the 50 stunning images that appear in this year's fantastic line-up.

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